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A FURTHER EVALUATION OF ARTIFICIAL PNEUMOTHORAX IN LOBAR PNEUMONIA

CHAIRMAN'S ADDRESS

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In previous reports<sup>1</sup> on the treatment of lobar pneumonia with artificial pneumothorax it was pointed out that no evidence of beneficial effect on the duration or outcome of the disease was obtained in late cases of more than seventy-two hours' duration or in earlier cases with pleural adhesions which prevented adequate collapse and immobilization of the involved lung. Of fourteen late cases eight showed spread to other lobes, empyema developed in two and there were nine deaths. In twelve early cases with adhesions the expected duration of the disease was not obviously shortened in eleven, four showed further spread of the pneumonia, empyema developed in two and there was one death.

Of the total group of forty-two cases there remained sixteen without pleural adhesions in which treatment was started prior to seventy-two hours after onset. Concerning six of these, first treated between forty-eight and seventy-two hours after onset, it was stated that, although all appeared to be benefited, the apparent prompt improvement was of doubtful significance in view of the early appearance of antibodies in three and the occurrence of relapse after initial improvement in two. Of the remaining ten, first treated prior to forty-eight hours after onset, all showed relief of symptoms with prompt recovery by crisis in five and apparently accelerated recovery by lysis in four. In none could the short course be attributed to the early appearance of antibodies. In spite of the noteworthy fact that none of these ten patients happened to be bacteremic, the response nevertheless seemed sufficiently encouraging to warrant further study in an effort to reach a more definite opinion concerning the possible value and already fairly obvious limitation of artificial pneumothorax therapy. With this in view thirty additional cases have been treated, the pertinent data being presented in tables 1 and 2. The procedure followed was

that previously described,<sup>1</sup> namely the induction and maintenance of complete collapse of the lung on the involved side, so far as this was possible.

Analysis of the results in these additional cases serves first to confirm the limitations previously pointed out. Of the thirty cases, three (10, 11 and 12, table 1) were treated later than seventy-two hours after onset. One, patient 10, showed further spread of the pneumonia and died. One, patient 11, though promptly relieved of pleural pain, had an otherwise natural course, recovering by lysis concurrently with the appearance of agglutinins in the blood, while the third, patient 12, also promptly relieved of pleural pain, had an immediate crisis; but this was not unexpected, as a pseudocrisis had already occurred on the fourth day. Nine earlier patients, also shown in table 1, turned out to have pleural adhesions which prevented adequate collapse. In none of these was the course favorably affected. Six had spread of the pneumonia to other lobes, one had empyema, six died.

There remain eighteen cases without pleural adhesions in which treatment was initiated prior to sixty hours after onset (table 2). Of these, four (13, 21, 25 and 28) showed prompt recovery by crisis, but patient 21 must be eliminated because of simultaneous treatment with type I antipneumococcus serum. Seven other patients (17, 19, 22, 23, 24, 27 and 29), three of whom were bacteremic, appeared to be clinically improved and recovered by lysis without further spread of the pneumonia. On the other hand the clinical course was not favorably modified in seven. Four of these showed further spread of the pneumonia, two had empyema, and three died.

COMMENT

Analysis of the course of events in the total series of thirty-three<sup>2</sup> early cases in which pleural adhesions were not present, summarized in table 3, would seem to suggest that artificial pneumothorax treatment is of definite value not only in providing relief from pleural pain but also in beneficially affecting the course and outcome of the disease in those cases in which satisfactory collapse can be promptly established. Recovery of approximately one half of the patients before or by the fifth day indicates a much shorter average duration than usual and the case fatality percentage is quite low. Furthermore, comparison of the results with those in the concurrently treated group of early cases in which pleural adhesions were present so that adequate collapse could not be established, shows a striking contrast between the two groups with respect to duration of the acute febrile stage, frequency of further spread of the pneumonia, subsequent development of bacteremia, inci-

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This investigation has been made with the assistance of grants from the Committee on Therapeutic Research, Council on Pharmacy and Chemistry, American Medical Association, and the Research Fund of Yale University School of Medicine.

1. Blake, F. G.; Howard, M. E., and Hull, Winifred S.: Tr. A. Am. Physicians 49:119, 1934; Artificial Pneumothorax in the Treatment of Lobar Pneumonia, J. A. M. A. 105:1489 (Nov. 9) 1935.

2. Case 21 excluded because of simultaneous treatment with type I antipneumococcus serum on the second day.



dence of empyema and the number of deaths (table 3). Obviously, however, an analysis of factors other than the absence or presence of pleural adhesions which might have influenced the results is essential before the apparently good results in the group without pleural adhesions can justifiably be attributed to treatment with artificial pneumothorax. Some of the factors which can be compared are the relative frequency of the different pneumococcus types, the distribution of cases according to age, the time in twenty-four hour periods after onset when treatment was started, the number of lobes already involved when treatment was begun, and the presence

in the group with adhesions as in the group without adhesions. In only one important respect does the group without adhesions lack a chance advantage, namely in the proportion of patients initially bacteremic, but even here the apparent equivalence must be discounted as one of the three type I bacteremic patients in the non-adhesion group received antipneumococcus serum simultaneously with pneumothorax therapy and three had infections due to pneumococcus types IV, VIII and XXXI, respectively, with blood cultures which showed less than one colony per cubic centimeter of blood, while two of the three bacteremic patients with pleural

TABLE 1.—Cases with Pleural Adhesions and Late Cases

Clinical Data					Pneumothorax Treatment			Results
Patient	Age	Pneumo-coccus Type	Blood Cultures	Site	Begun, Hours After Onset	No. of Treat-ments	Total Amount of Air, Cc.	
1. P. C.	84	III	— +	L.U., L.L.	17	3	1,350	Clinical Course Following Treatment Bacteremia developed, died 3d day Spread to L.U., recovered by lysis, 9th day Progressively worse, died 3d day Spread to L.L., died 6th day Empyema developed, thoracotomy, recovered Spread to R. L., bacteremia developed, died 7th day Contralateral spread, died 5th day Spread to L.L., type I serum, recovered 6th day Spread to L.L., died 7th day Contralateral spread, type I serum, died 5th day Pleural pain relieved, recovered by lysis, 11th day Pleural pain relieved, prompt recovery by crisis, 5th day
2. E. W.	32	XIII	—	L.L.	25	3	1,400	
3. R. C.	44	I	— +	R.U., R.M.	26	2	550	
4. P. Co.	52	III	—	R.U.	26	3	2,250	
5. W. W.	18	I	—	R.M.	32	3	2,650	
6. A. F.	58	I	— +	R.U.	33	2	1,650	
7. G. B.	55	IV*	—	L.L.	35	3	1,550	
8. C. M.	47	I	—	R.L.	48	2	1,750	
9. J. H.	63	III	—	R.U., R.M.	70	5	3,050	
10. M. S.	27	I	— +	L.L.	84	1	600	
11. J. R.†	29	IV	—	L.U., L.L.	84	1	600	
12. V. W.†	28	IV*	—	R.M.	96±	1	500	

\* Pneumococcus group IV, type not determined.  
† No adhesions; one treatment for relief of pleural pain.

TABLE 2.—Early Cases Without Pleural Adhesions

Clinical Data					Pneumothorax Treatment			Results			
Patient	Age	Pneumo-coccus Type	Blood Cultures	Site	Begun, Hours After Onset	No. of Treat-ments	Total Amount of Air, Cc.	Clinical Course Following Treatment	Day	Spread	Complica-tions
13. J. Mc.	64	XIX	—	L.L.	12	5	2,250	Prompt recovery by crisis.....	3	—	None
14. J. B.	38	XI	—	L.L.	18	3	3,100	Unimproved, recovery by lysis.....	5-7	R.U.	None
15. M. K.	32	VII	— +	R.U.	20	4	2,300	Contralateral spread, bacteremia, died...	5	L.L.	None
16. A. De.	48	VIII	—	R.U.	20	3	2,150	Unmodified, recovered .....	...	—	Empyema
17. M. W.	39	IV*	—	R.U.	24	5	1,800	Improved, recovery by lysis.....	4-0	—	None
18. S. R.	17	I	— +	L.L.	25	3	2,800	Progressively worse, died.....	6	R.L., R.U.	Empyema
19. W. C.	37	XXXII	—	L.L.	25	4	1,700	Marked improvement, mild relapse, recov- ered by lysis	5-8	—	None
20. A. C.	45	I	— +	L.L.	30	6	2,425	No benefit, type I serum, recovered.....	8	—	Sterile pleuri effusion
21. F. C.	18	I	— +	L.L.	32	3	2,350	Type I serum, 2d day, recovered by crisis	3	—	None
22. B. G.	30	XXXI	— +	R.U.	34	4	2,050	Unimproved, recovered by lysis.....	4-7	—	Sterile pleura effusion
23. E. B.	30	IV	— +	R.L.	35	2	1,950	Improved, recovery by lysis.....	3-5	—	None
24. A. G.	26	III	—	R.U.	40	4	2,300	Improved, recovery by lysis.....	3-5	—	None
25. T. V.	48	XXXII	—	L.L.	41	3	1,300	Prompt recovery by crisis.....	3	—	None
26. C. H.	73	III	—	R.U.	42	2	1,700	Progressively worse, died.....	6	R.L., L.L.	None
27. J. Y.	29	X	—	R.M.	50	5	4,425	Marked improvement, mild relapse, recov- ered by lysis	6-9	—	None
28. R. M.	42	VIII	—	R.L.	53	1	600	Immediate recovery by crisis.....	3-4	—	None
29. E. I.	51	VIII	— +	R.U.	54	1	700	Improved, recovery by lysis.....	5-6	—	None
30. B. P.	38	I	—	L.L.	56	3	1,450	Unmodified, recovery by crisis.....	7	—	None

\* Pneumococcus group IV, type not determined.

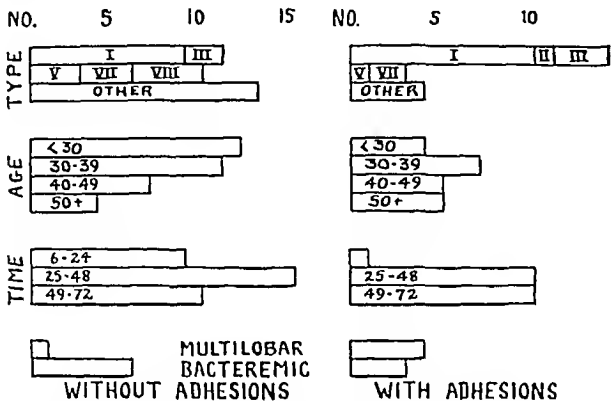
of bacteremia prior to treatment. From the analysis shown in chart I, it is at once apparent that a smaller proportion of the cases without adhesions were due to types I, II and III pneumococci, a much larger proportion to the other types than was the case in the group with adhesions. It also happens that the ratio of younger patients under 40 years of age to older patients is nearly twice as large in the group without adhesions as in the group with adhesions. Furthermore, nine of the former group were treated within twenty-four hours after onset as contrasted with only one of the latter group, a fact which might provide a chance advantage to the group without adhesions, at least so far as earlier recovery is concerned. Finally, the proportion of patients with more than one lobe involved when treatment was started is six and a half times as great

adhesions showed ten and thirty-four colonies per cubic centimeter, respectively.

In spite of these several advantages possessed by the group without pleural adhesions, comparison of the two groups subdivided according to pneumococcus type, time of treatment and age still shows in each comparable subdivision a much better result in the group without adhesions (table 4), which might seem to justify the conclusion that artificial pneumothorax therapy is of definite value in lobar pneumonia. For example, of fifteen patients without adhesions treated between twenty-four and forty-eight hours after onset, of which five were bacteremic, six had recovered on or before the fifth day as contrasted with none of the ten with adhesions, of which only two were bacteremic. Similarly, of eighteen patients without adhesions, from 30 to 49 years of age,

nine had recovered by the fifth day or earlier as against none of the twelve patients with adhesions.

A really critical evaluation, however, demands that all the favorable and unfavorable factors enumerated which might influence the outcome independently of pneumothorax therapy be simultaneously taken into consideration. If this is done, as shown in chart 2, it will be found that eight, or 23.5 per cent, of the group without adhesions as against one, or 4.8 per cent, of the



group with adhesions fall into the most favorable classification, i. e., nonbacteremic, unilobar, pneumococcus group IV patients under 40 years of age and first treated less than thirty-six hours after onset. Even more significant is the fact that seven, or 33⅓ per cent, of the group with adhesions as against only two, or 5.9 per cent, of the nonadhesion group fall into the unfavorable classification of patients over 40 with infection due to pneumococcus types I or III. Five of the seven fatal cases in the group with adhesions are found here. The analysis might be carried further but this seems hardly necessary, since it would serve only to confirm the fact,

TABLE 3.—Summary of Results in Early Cases

Clinical Course	33 Cases Without Pleural Adhesions*		21 Cases With Pleural Adhesions	
	No.	Per Cent	No.	Per Cent
Bacteremia developed.....	5	15	0	—
Empyema developed.....	6	18	0	—
Died.....	5	15	1	5
	10	48	1	5
	5	15	10	48
	2	6	6	29
	2	6	3	14
	3	9	7	33

\* Case 21, excluded because of simultaneous treatment with anti-pneumococcus serum on second day.

already obvious, that the apparently favorable results in the group without adhesions cannot justifiably be attributed to the effect of artificial pneumothorax therapy but are much more probably due to the initial advantages which this group possessed.

A similar type of analysis, so essential to adequate evaluation, cannot be applied to all the cases recorded in the literature, since the necessary data are lacking in many of them. Reports<sup>3</sup> which have appeared since our

previous review,<sup>4</sup> however, as most of the authors conclude, fail to provide convincing evidence that artificial pneumothorax is a curative procedure, even though symptomatic relief, particularly of pleural pain, is undoubtedly seen in many cases. Especially significant

TABLE 4.—Results in Cases Grouped According to Pneumococcus Types, Age and Time of Treatment

	Without Pleural Adhesions						With Pleural Adhesions					
	Number	Recovered by 3th Day	Spread	Bacteremia Developed	Empyema	Died	Number	Recovered by 5th Day	Spread	Bacteremia Developed	Empyema	Died
Type I, II, III....	11	4*	3	0	1	2	14	1	6	4	3	6
Group IV.....	23	12	3	2	1	1	7	0	4	2	0	1
Age												
< 30.....	12	5*	2	0	1	1	4	1	2	1	1	0
30-39.....	11	4	2	2	0	1	7	0	2	2	2	1
40-49.....	7	5	0	0	1	0	5	0	2	1	0	1
50+.....	4	2	1	0	0	1	5	0	4	2	0	5
Hours after onset												
6-24.....	9	5	2	1	1	1	1	0	0	1	0	1
25-48.....	15	6*	2	1	1	2	10	0	5	3	1	4
49-72.....	10	5	1	0	0	0	10	1	5	2	1	2

\* Case 21 excluded because of simultaneous treatment with anti-pneumococcus serum.

is the apparent failure of artificial pneumothorax to check bacteremia consistently when present and invariably to prevent its subsequent development in patients who are nonbacteremic when treatment is instituted.

SUMMARY

Seventy-two patients with lobar pneumonia have been treated with artificial pneumothorax. Effort to evaluate the therapeutic usefulness of this procedure. It has been found to be of no value (1) in late cases of more than seventy-two hours duration and (2) in earlier cases with pleural adhesions which interfere with

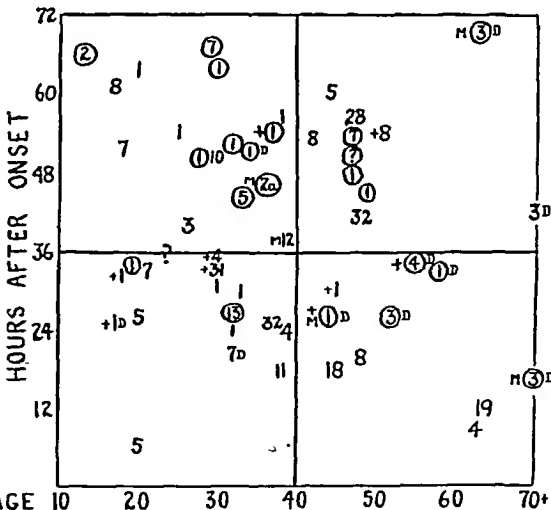


Chart 2.—Analysis of factors influencing course and outcome. Numbers indicate pneumococcus type: without circles, without pleural adhesions; in circles, with pleural adhesions; +, bacteremic; M, multilobar; D, died.

adequate collapse of the lung. These two facts alone would seriously limit its field of possible usefulness, even were it of value in early cases without pleural adhesions, since many patients do not present themselves until late and adhesions are found in approximately 30 to 40 per cent of early cases. A further important limitation is the fact that it has not been found to exert a demonstrable effect on an established

3. Klein, Thomas, and Tuck, V. L.: Am. Rev. Tuberc. 32: 511 (Nov.) 1935. Robertson, W. E.: Lancet 2: 1282 (Dec. 7) 1935. Abernethy, T. J.; Horsfall, F. L., and MacLeod, C. M.: Bull. Johns Hopkins Hosp. 58: 35 (Jan.) 1936. Birnbaum, G. L., and Coryllos, P. N.: Pneumothorax Therapy in Experimental Lobar Pneumonia in the Dog, Arch. Int. Med. 57: 610, (March) 1936. Howlett, J. G.; Luft, Raymond, and Astwood, E. B.: Canad. M. A. J. 34: 387 (April) 1936. Daniels, L. P.: Schweiz. med. Wchnschr. 66: 1260 (Dec. 12) 1936. Lynch, V. T. J.: M. J. Australia 2: 355 (Aug. 28) 1937.

4. Blake, F. G.; Howard, M. E., and Hull, W. S.: Medicine 15: 1 (Feb.) 1936.

bacteremia nor does it necessarily prevent subsequent invasion of the blood by pneumococci.

Although the course and outcome in the majority of thirty-three early cases without adhesions would appear, on first analysis, to have been beneficially modified by treatment with artificial pneumothorax, a careful evaluation of other factors which might have been responsible for the apparently good results renders such a conclusion untenable.

#### CONCLUSION

Artificial pneumothorax would appear to be of value for the relief of pleural pain in selected early cases of lobar pneumonia. It has not been demonstrated that it possesses any curative value in this disease.

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## THE TREATMENT OF SUBCLINICAL AND CLASSIC PELLAGRA

USE OF NICOTINIC ACID, NICOTINIC ACID AMIDE AND SODIUM NICOTINATE, WITH SPECIAL REFERENCE TO THE VASODILATOR ACTION AND THE EFFECT ON MENTAL SYMPTOMS

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The observations of Elvehjem, Madden, Strong and Woolley<sup>1</sup> showing that nicotinic acid cures canine black-tongue stimulated several investigators to administer nicotinic acid to human beings with pellagra. Their reports have been reviewed elsewhere.<sup>2</sup> Spies, Cooper and Blankenhorn<sup>2</sup> recently reported that in a series of seventeen cases of pellagra, nicotinic acid, nicotinic acid amide and sodium nicotinate dramatically blanched the erythematous dermal lesions, produced healing of the glossitis, stomatitis, vaginitis, urethritis and proctitis, and reduced the amount of porphyrin in the urine to normal. These authors also described flushing, burning and itching of the skin following the administration of massive doses of these drugs. In view of these observations it seemed desirable to determine the effect of nicotinic acid, of its amide, sodium salt and diethyl amide (coramine) and of trigonelline (the methylbetaine of nicotinic acid) on manifestations of pellagra other than those mentioned and to investigate further their pharmacologic and therapeutic action. The present report is concerned with the effect of these drugs on normal human beings and on persons with pellagra, in addition to those patients previously described by Spies, Cooper and Blankenhorn.

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J. Elvehjem, C. A.; Madden, R. J.; Strong, F. M., and Woolley, D. W.: Relation of Nicotinic Acid and Nicotinic Acid Amide to Canine Black-tongue, *J. Am. Chem. Soc.* 59:1767, 1937; The Isolation and Identification of the Anti-Black Tongue Factor, *J. Biol. Chem.* 123:137 (March) 1938.

2. Pellagra and Nicotinic Acid, editorial, *J. A. M. A.* 110:289 (Jan. 22) 1938. Aetiology of Pellagra and the Nutritive Value of Maize, *Lancet* 1:282 (Jan. 29) 1938. Spies, T. D.; Cooper, Clark, and Blankenhorn, M. A.: The Use of Nicotinic Acid in the Treatment of Pellagra, *J. A. M. A.* 110:622 (Feb. 26) 1938. Nicotinic Acid and Pellagra, editorial, *South. M. J.* 31:331 (March) 1938.

#### MATERIAL AND METHODS

**Subjects.**—A total of seventy-three persons with endemic pellagra were studied at the Cincinnati General Hospital and at the Hillman Hospital of Birmingham, Ala. This number included all adults with classic pellagra admitted to either hospital between Dec. 15, 1937, and June 1, 1938. Forty-six had endemic pellagra; in sixteen pellagra developed after malnutrition resulting from other diseases, and in eleven it developed after chronic alcoholic addiction. All persons in this series had lesions of the mucous membrane diagnostic of pellagra; and fifty-six had characteristic pellagrous dermatitis. They all had lost weight, strength and appetite; fifty-one had mental symptoms, forty diarrhea, twenty-seven urethritis, twenty-four severe vomiting, twenty-three peripheral neuritis, twenty-three vaginitis, twenty-one proctitis, ten constipation and two cardiac decompensation (thought to be of the nutritional type described by Weiss and Wilkins<sup>3</sup>).

Observations on the children in several hundred "pellagra families" revealed that many of these children show clinical signs of early pellagra, and it therefore seemed advisable to include them in our studies. Preliminary studies indicate that the early symptoms are even more vague and difficult to recognize in the child than in the adult. The children are usually below normal in weight and height; they have made poor progress in school; they react sluggishly, and their inability to concentrate is easily noticeable. Poor appetite, indigestion, vomiting, soreness of the tongue and lips and constipation are common symptoms.

A dietary history of the family reveals that in many cases the diet of the mother during pregnancy was inadequate and that shortly after birth the child was given a formula because the mother had insufficient milk. This formula was not always adequate in the essential nutrients. Frequently the child has been a "feeding problem" since birth, refusing to take enough of the formula for his energy needs and later showing a preference for one or two foods and refusing all others. The diet has consisted almost entirely of carbohydrate foods; milk, eggs and meat either were not included or were given in insufficient quantities.

Thirty-six of the children observed had glossitis and dermatitis diagnostic of pellagra. After the administration of nicotinic acid (from 100 to 200 mg. daily) or one of its compounds, they experienced an increased sense of well being and disappearance of symptoms. Ten children without the usual diagnostic evidence of pellagra gave a similar response after the ingestion of nicotinic acid.

We interpret these observations as indicating that a slowly progressing deficiency in the antipellagra factor commonly existed in the children studied but that definite diagnostic evidence of pellagra develops late.

In addition to these patients, 199 with subclinical pellagra were studied at the Hillman Hospital. Further study of some of the reactions already noted in pellagrins following oral or parenteral administration of nicotinic acid was carried out on 100 normal adults at the two hospitals.

**Method of Study.**—As soon as the pellagrin in severe relapse came to either hospital, he was placed under the direct charge of one of us, who assumed responsibility for thorough clinical studies, for all indicated laboratory determinations and for therapy and

3. Weiss, Soma, and Wilkins, R. W.: The Nature of the Cardiovascular Disturbances in Nutritional Deficiency States (Beriberi), *Ann. Int. Med.* 11:104 (July) 1937.

necessary control measures. We were given invaluable assistance by the professional and administrative staffs of both hospitals and particularly by Dr. James B. McLester; Miss Jean Grant, dietitian; Miss Ann Van Blaricom, nurse; Miss Elizabeth Zschiesche, Miss Nelwyn Huff and Miss Helen Grant, technicians, and Dr. Yasuo Sasaki, E. S. Gross and S. P. Vilter, chemists. The method of study in general was similar to that previously adopted for determination of the presence of an antipellagra factor.<sup>4</sup> This method may be described briefly as follows: If the lesions of the mucous membranes of a pellagrin show no improvement over a period of several days while the patient's diet is restricted, they serve as an effective index for testing the potency of a potential therapeutic agent. If the substance has therapeutic value, the lesions will heal promptly when sufficient amounts of the substance are added as a supplement to the diet, all other conditions remaining constant. Repeated determinations of nicotinic acid and porphyrins in the urine were made before, during and after the period of treatment. These determinations will be reported later. Repeated smears of the lesions of Vincent's infection were made before, during and after treatment.

**Dietary Management.**—The seventy-three pellagrins were divided into four groups. Each subject was observed during a control period of from one to three days. The first group consisted of twenty-two pellagrins who drank water but ate no food during the test period; the second group was composed of twenty-one pellagrins who received from 100 to 200 Gm. of dextrose daily and drank water ad libitum during the control period; the third group consisted of fourteen pellagrins who were offered an ordinary hospital diet and water ad libitum (these patients refused to eat more than small amounts of food, and their lesions failed to improve); the fourth group consisted of the remaining sixteen pellagrins, who were given only a basic diet and water ad libitum for a period of from two to three days. At the end of the control period, nicotinic acid or a similar drug was given to each patient. After improvement occurred, every patient was given a well balanced, high vitamin diet.

**Materials and Mode of Administration.**—The nicotinic acid employed in the treatment of the pellagrins in this series was supplied by the Eastman Kodak Company, Harris Laboratories, Merck & Co., the S. M. A. Corporation, Mead Johnson & Co. and Abbott Laboratories. Synthetic nicotinic acid amide was given to two patients, and sodium nicotinate, supplied through Merck & Co., was given to five. Coramine, furnished by Ciba Pharmaceutical Products, Inc., was given in doses of from 4 to 20 cc. daily to eleven pellagrins. Some of the patients given nicotinic acid amide or coramine, after showing the same clinical response as the other patients, were later given maintenance doses of nicotinic acid. Two patients were given a total of 1 and 1.5 Gm. of trigonelline, respectively, but there was no improvement; they were then given the same amount of nicotinic acid and responded promptly.<sup>4a</sup> Only two of the pellagrins

in this series were treated by intravenous injections of nicotinic acid, as we had shown previously that the oral method of administration is highly satisfactory. One of these patients received 10 mg. and the other 20 mg. daily for a period of four days. The oral dose of nicotinic acid and of the salts used in this study varied from a daily total of 50 mg. to 1 Gm. The individual oral dose usually varied from 20 mg. to 500 mg. We preferred to use amounts of from 50 to 100 mg., given five or six times daily. Each patient was observed carefully after the administration of any of these substances, and the pulse rate, temperature and respiratory rate were determined. Also, the patients were questioned concerning any untoward sensations, and laboratory studies were frequently made, which included blood counts, tests of the blood chemistry such as determination of the carbon dioxide-combining power, electrocardiograms, and roentgen examinations.

#### OBSERVATIONS

Within seventy-two hours of administration of large amounts of nicotinic acid, sodium nicotinate, nicotinic acid amide or coramine to the seventy-three pellagrins, we regularly observed fading of the mucous membrane lesions, blanching of the erythema of the cutaneous lesions when present, a tendency toward the return of normal gastrointestinal function, remission of mental abnormalities when they were present and a decrease or cessation of porphyrinuria. (Two of the patients died subsequently, one from uremia and the other from obstruction of the esophagus associated with the mediastinal lymphadenopathy of Hodgkin's disease.) Soon after receiving any one of these substances, the pellagrin volunteered that he felt a sense of general well being and manifested much more interest in his disease and in conditions around him. Within the first twenty-four hours the picture of apathy and lassitude gave way to one of wide-awake interest. Likewise, the effect of nicotinic acid or one of its compounds on the alimentary tract was dramatic. Usually within twenty-four hours, sometimes a day later, there were striking objective changes in the mucosa of the mouth, throat and tongue, and in the rectum. The abnormal redness and the Vincent's infection disappeared. The appetite of some of the patients increased and the stools rapidly became normal, irrespective of whether the person had diarrhea or suffered from constipation. The amount of porphyrin in the urine, which was increased in forty-six of the forty-eight pellagrins tested, returned to normal after the administration of adequate amounts of nicotinic acid or one of its salts. The two pellagrins without increased porphyrinuria had extensive lesions of more than three months' duration. The fiery red dermal erythema of all patients blanched after the administration of nicotinic acid, but we did not note any special healing effect on the dermatitis of patients in whom the continuity of the skin had become broken and whose lesions were moist and ulcerated or dry and thickened. The vaginitis and urethritis usually disappeared within the first twenty-four hours. The two patients with cardiac decompensation showed a decrease in dyspnea, orthopnea and edema in three and four days, respectively, after the oral administration of 500 mg. of nicotinic acid and the injection of from 40 to 100 mg. of thiamin chloride (crystalline vitamin B<sub>1</sub> hydrochloride) daily. The peripheral neuritis present in ten of the patients was not relieved by nicotinic acid, but the pain and numbness disappeared within forty-eight hours after the injection of 50 mg. of vitamin B<sub>1</sub> twice

4. Spies, T. D.: Pellagra: Improvement While Taking So-Called "Pellagra-Producing" Diet, *Am. J. M. Sc.* 184: 837 (Dec.) 1932; Observations on the Treatment of Pellagra, *J. Clin. Investigation* 13: 807 (Sept.) 1934.

4a. Through the cooperation of Dr. M. K. Heath, Dr. K. U. Jones, and Dr. J. M. Bryan, veterinarians of Birmingham, Ala., nicotinic acid, nicotinic acid amide, sodium nicotinate and coramine have been used in the treatment of forty cases of spontaneous canine blacktongue. In these cases there was no dermatitis; there were no mental symptoms, and no evidence of increased porphyrinuria was produced by the method of Beckh, Ellinger and Spies. In every instance there was spectacular improvement within twenty-four to forty-eight hours.

each day. This finding has been reported in detail by Spies and Aring.<sup>5</sup> Perhaps the most striking improvements following the administration of nicotinic acid to a pellagrin in relapse are the change in mood and personality, and the disappearance of mental symptoms. Since these changes are unusually difficult to describe, two representative case histories from those of the eighteen patients with unusually severe pellagrous psychoses are given in some detail:

**CASE 1.—History.**—I. C., a Negro widow, aged 59, had a progressive illness of at least nine months' duration. The family history and the past history are irrelevant.

About a year before admission the patient became weak and complained of vague discomfort in the epigastrium following meals, of gaseous eructations, anorexia, nausea on occasion, constipation and of weakness. She lost 15 pounds (6.8 Kg.) within the next three months. Thereafter the symptoms became progressively worse. During the two months just prior to admission to the hospital, she had little food; spent all her time in bed because of weakness; complained of soreness, particularly in the substernal region; lacked interest in her household, and did not observe her surroundings. Her memory became impaired, and she became disoriented and had hallucinations. Her family said that she didn't notice the things which she had formerly, that she often complained of seeing snakes and worms, and that she was "crazy and foolish in the head." Her food during the course of her illness consisted of decreasing quantities of turnip greens, rice, bread, syrup and milk.

Physical examination showed an emaciated Negress who appeared to be acutely and chronically ill. She had swelling and reddening of the mucous membranes of the tongue, mouth, throat and vagina. She had characteristic lesions of pellagra over the nose, forehead, dorsum of the hands, wrists, elbows, knees and feet. The tendon reflexes were equal and hyperactive. All coordinating movements were jerky. She was somnolent and depressed. When aroused, she was always confused and apprehensive, refused to cooperate and was disoriented as to time and place. Her memory was impaired so that she could not recall the trip from her home to the hospital or the names of her children.

The laboratory examinations gave essentially normal results except that the hemoglobin content was 58 per cent, the red blood cell count was 2,900,000 and large amounts of coproporphyrin were found on repeated tests of the urine.

**Course in the Hospital.**—During the first three days in the hospital she resisted attention, would not take food and remained depressed mentally. She was given nicotinic acid by force in doses of 1,100 mg. during the first twenty-four hours and 500 mg. daily thereafter. After twenty-four hours of treatment, definite improvement of the mucous membranes was noted, and by the third day they appeared normal. On the fourth day she was less depressed mentally and less confused and willingly took food and medication. On the fifth day she talked freely, conversed with other patients, became interested in her condition and apparently had insight for the first time into her illness. She volunteered that she had been "crazy in her head" and that she did not know anything about coming to the hospital. She stated that she had thought that snakes, worms and knives were crawling over her but that she now realized that these sensations were unreal. Her appetite and general condition improved and she was discharged from the hospital in good condition.

**CASE 2.**—E. B., a Negress aged 49, was admitted to the hospital because of severe pellagra. The family history and the past history are irrelevant.

For almost a year the patient had eaten chiefly sweet and greasy foods and occasionally some green vegetables. About three months prior to admission extreme anorexia developed and she lost weight. She felt weak, experienced abdominal discomfort and noticed alternating periods of diarrhea and of constipation. She often had involuntary defecation and urination, became unable to sleep, was very nervous and, according to her

family, had severe personality changes. A severe "hurting in the stomach and breaking out of the skin" developed one month before admission. During the last two weeks before coming to the hospital she was unable to get out of bed and refused all food. She was unable to sleep, her memory was impaired and she was disoriented entirely as to time and place. She had hallucinations characterized by the seeing of insects and snakes, and thought that people were trying to poison her; she heard groups of people discussing attempts to kill her. She had many delusions of persecution.

The patient was emaciated, confused and restless, and she required restraint. The mucous membranes of the tongue, mouth, throat, gums and vagina were red, and small areas of ulceration were present. The skin in general was dry, rough and loose. She had sandpaper-like roughness over the nose and forehead and pellagrous dermatitis over the neck, bony prominences, dorsum of the hands, wrists, forearms, feet, ankles and perineum. Many of the lesions were thickened and pigmented, excoriated and macerated. A decubitus ulcer was present over the sacrum. All tendon reflexes were present and hyperactive. Her mental status was one of confusion, apprehension, restlessness and disorientation as to time and place. She had delusional ideas of persecution and visual and auditory hallucinations.

Laboratory work gave essentially normal results except that the blood hemoglobin content was 70 per cent and the red blood cell count 3,700,000.

**Course in the Hospital.**—During the first ten days, while the patient was taking a basic diet and no medication, except 3 ounces (90 Gm.) of brewers' yeast on the first day, her condition remained stationary. There was slight healing of the skin during this period. During the next twelve days she was offered but took little of a high caloric, high vitamin diet, and each day she received four injections of 10 cc. of liver extract. During this period there was progressive healing of the dermal lesions and the tongue became normal. She took little food, and there was no essential change in the mental condition. Involuntary defecation and urination continued. On the twenty-second day in the hospital the administration of nicotinic acid was begun in doses of 100 mg. five times a day. Three days later she was mentally clear and cheerful, talked freely and had no delusions or hallucinations. She began to eat more. On the fourth day she ate all the food on her tray and on the fifth day asked for and ate a second regular hospital tray of food. One week after the treatment by means of nicotinic acid she became inquisitive about being brought to the hospital and about members of her family. She was discharged from the hospital in good condition.

#### THE EFFECT OF NICOTINIC ACID ON SUBCLINICAL PELLAGRA

Having found that nicotinic acid is effective in treating pellagra and in preventing recurrences under hospital conditions,<sup>6</sup> we thought it worth while to study its effect on adult pellagrins living at home without change in environment or activities. One hundred and ninety-nine such pellagrins who were subject to one or two recurrences of the disease each year were selected for study.

Within one to three days after treatment with nicotinic acid was instituted, nearly all the patients volunteered that they felt much better and that dizziness, depression, burning sensations, confusion and "upset head" had disappeared. Thirty of the patients who had suffered from chronic constipation stated of their own accord that their bowel movements returned to normal after they took nicotinic acid. One patient whose pellagra had been complicated by mucous colitis had normal stools for the first time in three years.

After continuing to take the prescribed amount for several weeks, however, many of the patients stated

S. Spies, T. D., and Aring, C. D.: The Effect of Vitamin B<sub>3</sub> on the Peripheral Neuritis of Pellagra, *J. A. M. A.* 110:1031 (April 2) 1938.

6. Grant, J. M.; Zschiesche, Elisabeth, and Spies, T. D.: The Effect of Nicotinic Acid on Pellagrins Maintained on a Pellagra-Producing Diet, *Lancet* 1: 939 (April 23) 1938.



that they did not feel especially well. The dose of nicotinic acid was increased in such instances and this was invariably followed by a second improvement in sense of well being and increase in energy. In a group of control patients these periods of improvement have not occurred. These studies are still in progress and will be reported later,<sup>7</sup> but we can say that the pellagrins in the test group, as contrasted with those in the control group, have been benefited and that nicotinic acid is valuable in preventing recurrences of pellagra. It is of interest that in a number of cases evidence of vitamin B<sub>1</sub> deficiency developed while the patient was taking large quantities of nicotinic acid.

Throughout all the studies we observed that the response of the individual pellagrin to a given amount of nicotinic acid, or to one of its salts, is extremely variable. For example, we have noticed healing after the administration of as little as 40 mg. of nicotinic acid daily by mouth in one person, while in other persons receiving the same amount the disease became worse. We have given a single oral dose of 1 Gm., which produced transient flushing, reddening and burning of the skin, followed by remission of the pellagrous lesions. We do not, however, recommend such large doses, as the subsequent symptoms are unpleasant and the results may prove to be deleterious in effect. Two patients who were restricted to a basal diet were given nicotinic acid intravenously because of their unwillingness to take the material orally. One of them showed improvement of the pellagrous glossitis and stomatitis and cessation of diarrhea after only 10 mg. had been injected daily for four days, while the other showed a prompt cessation of nausea and vomiting and healing of pellagrous glossitis after the daily administration of 20 mg. for the same length of time. Both of these patients were in the basal state, ate the full diet and had only mild lesions of pellagra. We have given single intravenous doses of 25 mg. in a 1:1,000 solution within two to three minutes without harmful effects, but we do not recommend that this dose of the material be administered so rapidly.

Although the symptoms of all pellagrins receiving nicotinic acid improved, irrespective of whether the patient was restricted to water, to water and dextrose or to a basic diet, we observed that the patients responded better if they ate large amounts of a well balanced diet, were kept at rest and had no coexisting disease.

#### EFFECTS OF NICOTINIC ACID ON 100 ADULTS WITHOUT PELLAGRA

In view of the fact that pellagrins in relapse and with subclinical pellagra often had flushing, burning and itching of the skin and other unpleasant symptoms after the administration of large amounts of nicotinic acid or its salts, it seemed essential to study this reaction in some detail in normal persons in order to ascertain whether the pellagrin had a peculiar reaction to these chemical substances.

**Cutaneous Response.**—The oral administration of large quantities of nicotinic acid is followed by flushing, burning, itching and an increased sensation of local heat in the skin. This finding apparently can be produced in all persons, although the amount required to produce it is extremely variable at different times in the same person and from one person to another. A patient with pellagra seems less likely to have this type of reaction. It was produced in about 5 per cent of the group when

an oral dose as small as 50 mg. in aqueous solution was given with the stomach empty, and it was produced in about 50 per cent when 100 mg. was given. It was present to some degree in every person receiving as much as 500 mg. orally, and the majority of the subjects had a reaction when 200 mg. was given. By detailed study of the changes in cutaneous temperature, we found that the increase was most marked over the ears, face and neck, less pronounced over the trunk and least pronounced over the extremities. In some cases the hands and feet showed no change, and occasionally they showed a decrease in temperature of from 1 to 2 degrees C. (1.8 or 3.6 degrees F.). Actual measurement of the changes in temperature by means of a thermocouple and a room with constant temperature (20 C.) revealed an average increase of from 1.5 to 2 degrees C. (2.7 to 3.6 degrees F.) over the face and neck (chart 1) and an increase of from 0.5 to 1 degree C. (0.9 to 1.8 degree F.) over the trunk. This elevation in temperature was most pronounced in areas where the other objective and subjective changes were present. The distribution of the changes followed the normal pattern of the cutaneous temperature, the temperature being greatest where the skin normally is warmest and

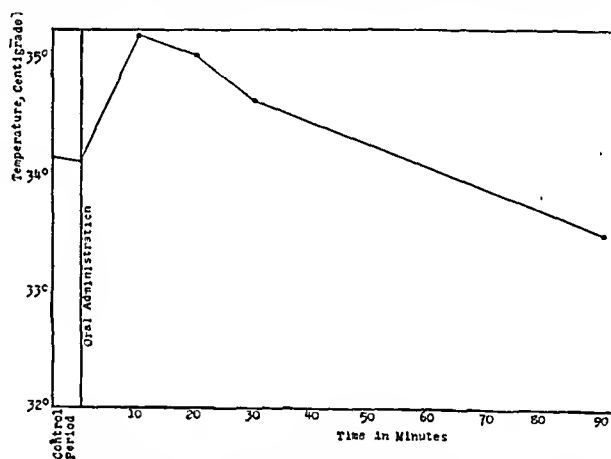


Fig. 1.—Changes in the temperature of the face (average of ten areas) of a normal man after oral administration of 100 mg. of nicotinic acid.

decreasing as it approached the colder periphery. The redness and flushing were extreme in the ears and striking over the malar bones, face and neck; they frequently assumed a blotchy and irregular distribution over the trunk and tended to decrease over the abdomen and the extremities. Occasionally, circumoral pallor was noted. In patients with the extreme degree of flushing there was sometimes slight elevation of the red areas. In some instances we noted flushing accentuated in the perineal and axillary regions, associated with a sense of increased warmth or itching. No change was noted in the tongue or mucous membranes. In a small percentage of the cases there was sweating, especially of the face and axillas. Usually the skin appeared more shiny after the flushing reaction.

Similar effects were observed following the intravenous injection of from 5 to 25 mg. of nicotinic acid in physiologic solution of sodium chloride. Variation in the pH from 3.4 to more than 7 did not change these effects.

Since the flushing, nausea, vomiting and abdominal cramps which sometimes follow the administration of large doses of nicotinic acid suggested a parasympathetic-like action similar to that produced by the

7. Spies, T. D.; Mc Lester, J. B.; Stone, R. E., and Grant, J. M.: Unpublished observations.

acetylcholine group of chemicals, it seemed advisable to make a comparative test for nicotinic acid and for acetylcholine. Chart 2 shows that the reactions produced by intra-arterial injection of acetylcholine and those produced by nicotinic acid are not identical. The nicotinic acid continues to give some general effect, demonstrating that it is not destroyed entirely or inactivated in the capillaries as is acetylcholine.<sup>8</sup> In both cases there was an increase in cutaneous temperature of from 1 to 2 degrees C. in the leg which received the injection. Nicotinic acid has caused a reaction like that to histamine when intracutaneous injections were made. It was noted, however, that the wheals differed considerably from the typical histamine wheal. The local reactions from nicotinic acid occur less frequently, are less marked and are of shorter duration than are those from histamine. The associated pruritus is less severe than that caused by comparable amounts of histamine.

**Cardiovascular and Respiratory Reactions.**—No constant deviation in the pulse, blood pressure or respirations occurred after oral or intravenous administration

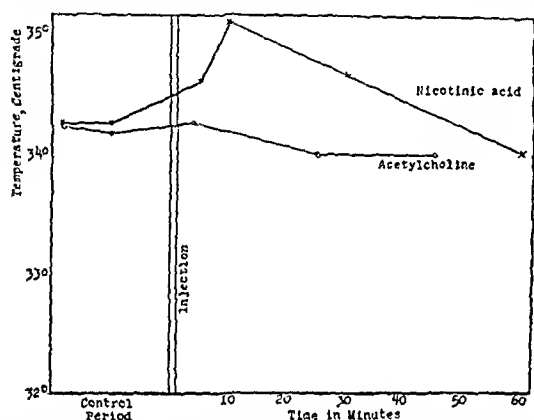


Fig. 2.—Temperature of the face (average of ten areas) of a normal man before and after injection of 10 mg. of nicotinic acid and 30 mg. of acetylcholine into the femoral artery.

of the drug under the conditions of this study. Rarely after intravenous injection of from 10 to 20 mg. of a 1:1,000 solution, given within a period of from one to three minutes, there was an increase in pulse rate of from five to ten beats per minute. This was not produced by similar injections of physiologic solution of sodium chloride. We have seen occasionally a transient increase in the rate and depth of respiration and in one patient true angor animi. Preliminary investigations with seven normal subjects revealed that there is no uniform variation in oxygen consumption during the period when the flushing is marked, but in two subjects there was some increase. We found no changes in the complexes in the electrocardiograms of four normal males made during or after the intravenous or oral administration of nicotinic acid in doses which produced the flushing reaction. Some patients have complained of dizziness after the oral administration of large doses.

**Effects on the Gastrointestinal Tract.**—Several subjects have complained of nausea and cramps in the epigastrium after the administration of single doses of nicotinic acid ranging from 300 to 1,500 mg. given orally and from 10 to 25 mg. given intravenously. Two

had vomiting; cramps and belching occurred in nine after the intravenous injection but in only four after the oral administration. In almost every instance the cramps occurred when the material was administered while the stomach was empty. Eight subjects were examined under the fluoroscope with barium sulfate in the stomach, before, during and after intravenous administration of the substance. No change could be demonstrated in four, but the other four had a definite increase in the depth of the peristaltic contraction rings of the stomach. Two of these four had severe cramps associated with generalized increase in gastric tonus, considerable decrease in the size of the stomach and complete cessation of all gastric movement for a minute. After resumption of gastric activity, the contraction waves rose much higher toward the cardiac end and were much deeper than they were prior to the administration of the drug. The subcutaneous injection of 5 mg. of nicotinic acid was followed in three patients by increased secretion of gastric hydrochloric acid, in one patient even when fasting anacidity was present. The magnitude of change, however, was not as large as that produced by 1 mg. of histamine in the same patient. Similar observations were made by V. P. Sydenstricker.<sup>9</sup>

**Other Observations.**—Because of the clearcut action of nicotinic acid on gastrointestinal function in pellagrins and in normal persons, we have made preliminary studies on a group of patients with constipation but without pellagra or organic gastrointestinal disease. In some instances there has been a striking return of bowel function to normal. In others, there has been no change.

In seven cases of radiation sickness we have used nicotinic acid orally in divided doses totaling from 200 to 1,000 mg. daily and have noted prompt cessation of the nausea, vomiting, anorexia and headache. In five of the seven cases the amount of porphyrin in the urine, which was abnormally large, returned to normal. Communications from V. P. Sydenstricker and John W. Spies indicated that they had observed similar results.

Since in dogs part of the nicotinic acid excreted in the urine is in the form of a conjugate with aminoacetic acid (glycine), nicotinuric acid,<sup>1</sup> we have made a study of the reactions of flushing and temperature in normal persons who were given 30 Gm. of aminoacetic acid one hour before they were given 500 mg. of nicotinic acid orally. In six cases studied to date we found that the elevation of temperature was delayed and decreased when compared with the elevation in control tests, in which aminoacetic acid was not given. Because we have found that the quantitative estimation of change in temperature after the administration of nicotinic acid varies considerably in a given person under standard conditions with the same dose, we have not yet enough data to be certain that this effect with glycine was not fortuitous.

**Excretion of Nicotinic Acid of Pellagrins in Relapse, of Persons with Subclinical Pellagra and of Normal Adults.**—Since some persons given the drug complained of increased frequency of urination after taking nicotinic acid, five subjects were given a constant fluid intake, with the output measured, for a week and were then given a total of 750 mg. of the drug orally in five equal, hourly doses. The urinary output was measured, and it was found that there was a slight increase during the period immediately following ingestion of the drug but

8. Ellis, L. B., and Weiss, Soma: A Study of the Cardiovascular Responses in Man to the Intravenous and Intra-Arterial Injection of Acetylcholine, *J. Pharmacol. & Exper. Therap.* 44: 235 (Feb.) 1932.

9. Sydenstricker, V. P.: Personal communication to the authors.

that there was no significant change in the twenty-four hour output for the control period and for the subsequent three days. It was found also that there was no significant change in the carbon dioxide combining-power of the blood after administration of this quantity of nicotinic acid. When doses of from 10 to 25 mg. of nicotinic acid were given intravenously, the substance appeared in increased amounts in the urine within the first hour. In some cases the content would not return to the preinjection level for one or more hours. When smaller doses, 10 mg. or less, were given, the nicotinic acid returned to the control level within one hour. Oral doses of 20 mg. or more usually did not produce a maximal rise in the content in the urine until the second, third or fourth hours.

Comparative study of several hundred determinations of nicotinic acid in the urine suggests a tremendous variation from time to time in the individual person and from person to person, but there does seem to be some influence on the amount excreted, depending on whether a person has a normal supply in his diet, on the amount of the drug given and on the mode of administration. Also, the evidence suggests that the body of a pellagrin in relapse retains more of the drug when it is administered than does a normal person of the same size, and that the flushing reaction is less frequent and less intense in the severely ill pellagrin than in the normal person given the same amount.

#### COMMENT

Study on the response to the nicotinic acid group of chemicals in the seventy-three pellagrins in relapse and in the persons with subclinical pellagra suggest that these substances are essential for the proper nourishment of the cells. Analysis of the case histories of several hundred pellagrins in relapse shows that three factors may operate to produce a deficiency of these substances in human beings: 1. The intake of foods containing nicotinic acid may be inadequate. 2. The absorption of nicotinic acid may be below normal because of some altered gastrointestinal function. 3. The intake may be sufficient and absorption normal for the average person, but there may be an increased demand because of excessive exercise, insomnia, hyperthyroidism or other conditions which increase the body's need.

The role of nicotinic acid in the nutrition of the body is not clear. It appears however that, if the body lacks adequate amounts of this substance or substances that act similarly, ill health occurs and pellagra eventually may develop. Studies on nicotinic acid have been so meager that its precise effect on the cells of the body is not known. The present observations, however, show that its lack leads to cellular alteration in the alimentary tract, skin and other systems, and to alteration in porphyrin metabolism. That nicotinic acid has a fundamental role in porphyrin metabolism is suggested by the fact that not only the porphyrinuria of pellagra but also that of other diseases has been decreased after the administration of nicotinic acid.<sup>10</sup> The observations that two normal adults ingesting a diet deficient in nicotinic acid showed increased porphyrinuria within a week and that the increased porphyrinuria disappeared after the administration of this substance also indicate a close interrelationship between nicotinic acid and por-

phyrins.<sup>11</sup> Certain observations suggest that, in addition to playing an apparently fundamental part in porphyrin metabolism, nicotinic acid is necessary for the normal functioning of the gastrointestinal tract.

For some time investigators have thought that pellagra may be due to a deficiency of more than one essential nutritional substance. Aring and Spies<sup>6</sup> recently showed that nicotinic acid will not relieve the pain and numbness caused by the peripheral neuritis of pellagra, whereas these symptoms can be relieved promptly by the administration of thiamin chloride. Conversely, these investigators have shown that the mucous membrane lesions of pellagra, which are cured by nicotinic acid, are not affected specifically by thiamin.

The present study reveals that the mild mental symptoms, consisting of confusion, dizziness, loss of memory and depression, are promptly benefited by nicotinic acid and that even the severe psychoses often associated with pellagra will be relieved by the administration of this substance. One patient who showed no clinical evidence of pellagra but who had had diarrhea for about twenty-five years and who, during the past few months, had acquired a severe psychosis in which she became disoriented as to time, place and person, responded rapidly and dramatically to the administration of nicotinic acid. Studies now being carried out on the prevention of recurrences of pellagra by means of nicotinic acid show to date that recurrences are at least delayed by the administration of this substance.

Despite the evidence presented in this paper showing the beneficial effects of nicotinic acid in the treatment of pellagra, we are convinced that all patients with pellagra should be given sufficient rest, adequate amounts of a well balanced diet, appropriate treatment for coexistent diseases and palliative therapy when necessary.

#### SUMMARY AND CONCLUSIONS

1. The present report confirms the previous observations of Spies, Cooper and Blankenhorn that after adequate doses of nicotinic acid, nicotinic acid amide or sodium nicotinate the pellagrous glossitis, stomatitis, vaginitis, urethritis and proctitis are healed; that the early erythematous lesions of pellagra are blanched, and that the porphyrin content of the urine returns to normal. In addition it has been found that the diethyl amide of nicotinic acid (coramin) has somewhat similar therapeutic properties, whereas trigonelline, in comparable doses, is inactive.

2. The present studies show that the early and late mental symptoms of pellagra in relapse and of subclinical pellagra are benefited dramatically by the administration of nicotinic acid. These results strongly suggest that nicotinic acid or closely related substances are essential to the integrity of the cells of the body, and that a sufficiently prolonged deficiency of such substances results in ill health and eventually in pellagra. To us it seems that pellagra should be considered as a reaction of the body to lack of essential nutritional substances and not just as a dermatitis, and that nicotinic acid is one of those essential substances and is necessary for the normal functioning of the gastrointestinal tract, the skin, the nervous system and probably other systems. It is of interest that the pellagrins who had associated Vincent's infection, mucous colitis, constipation or diarrhea were relieved of these conditions after the ingestion of nicotinic acid. In a group of patients

10. Spies, T. D.; Gross, E. S., and Sasaki, Y.: Effect of Yeast and Nicotinic Acid on Porphyrinuria, *Proc. Soc. Exper. Biol. & Med.* 35: 178, 1938.

11. Spies, T. D.: Unpublished observations.



without pellagra but with constipation, bowel function frequently resumed a normal status after oral doses of nicotinic acid. In some cases, however, there was no improvement.

3. Relapse in 199 patients with subclinical pellagra (who had previously had one or two recurrences each year) has been prevented through the "pellagra season" by daily oral doses of nicotinic acid. In some of these patients vitamin B<sub>1</sub> deficiency developed.

4. A study of the children in several hundred "pellagra families" indicated that a slowly progressing deficiency in the antipellagra factor commonly exists in these children but that definite diagnostic evidence of pellagra develops later. After the administration of nicotinic acid or one of its compounds they experienced an increased sense of well being and disappearance of symptoms. Pellagra in thirty-six of the children having the manifestations of acute pellagra responded to the oral administration of ten doses of 10 mg. each per day of nicotinic acid in the same manner as in adults.

5. The oral method of administration of nicotinic acid, nicotinic acid amide or sodium nicotinate is recommended except for patients unable to ingest the material by this route. The giving of nicotinic acid in oral doses of 200 mg. or in intravenous doses of 10 mg. within one minute nearly always produces dilatation of the small vessels of the skin of the face and the upper part of the trunk. This is characterized by increased temperature, flushing, burning and itching sensations. The sebaceous glands take on increased activity. Gastrointestinal motility may be increased, particularly if the drug is administered when the patient's stomach is empty. The pulse, blood pressure and respirations and the electrocardiogram are not regularly changed. The drug has a weak reaction like that to histamine and is not destroyed by passage through the capillaries, as is acetylcholine.

6. Observations on these pellagrins and on normal persons indicate that the requirement for nicotinic acid, nicotinic acid amide, sodium nicotinate or the diethyl amide of nicotinic acid is increased by infection, physical exercise and elevation of temperature. The dose of nicotinic acid and of these compounds required for any given pellagrin is extremely variable, but 500 mg. a day in divided doses is usually effective. Smaller doses, however, often produce dramatic relief of symptoms. In some cases twice this amount seemed more effective. It is recommended that all patients in relapse and those having subclinical pellagra be given a well balanced diet, ample rest in bed and effective treatment for any coexisting disease even when nicotinic acid is used as a supplement.

#### ABSTRACT OF DISCUSSION

DR. THOMAS T. MACKIE, New York: The authors have made a most important contribution in their confirmation of the amazing therapeutic value of nicotinic acid in the treatment of pellagra. There are three points that I should like to discuss. I have been interested in secondary deficiency disease for years. The lesions of the tongue described as the early indication of pellagra do not differ from similar lesions seen in persons in New York City who are suffering from mixed deficiency states and in whom the characteristic lesions of the skin never develop. In the second place, there is the matter of definition: What are the criteria which justify the diagnosis of pellagra? Like drowsical sprue and nondrowsical sprue, pellagra is a clinical entity, and by definition it is associated with the appearance of the tongue and buccal mucous membrane, symmetrically disposed dermatitis and lesions and disturbances of the central nervous system. It is important for the time being

to hold strictly to these criteria. It is interesting, in looking back through the recent developments of medicine, to see how some new bit of knowledge is applied by different people in different parts of the world at almost the same time. The use of nicotinic acid in the treatment of pellagra is no exception to this. Elvin and his associates used nicotinic acid in the control of canine blacktongue. In November 1937 Foots and his associates first reported the use of this preparation for human pellagra. In December 1937 Smith and Ruffin reported the use of nicotinic acid in the treatment of a human being with pellagra. Finally, Dr. Spies and his associates brought out their first and exceedingly important contribution in February of this year. Another point I should like to make is the necessity for caution in the interpretation of the value of nicotinic acid for so-called pellagra, at least as it is seen in the North, where it occurs almost invariably as the result of alcoholism or some advanced and serious chronic disease. In that respect it differs materially from the true endemic pellagra of the South. It seems not unreasonable, therefore, to anticipate that the therapeutic value of nicotinic acid in the hands of practitioners may appear to be less effective in the North than in the South. It has been my experience that the drug should be used with caution in treating patients presenting the lesion of the tongue which the authors described but not the lesions of the skin and that the drug is not as effective as it appears to be for the true endemic pellagra.

DR. JULIAN M. RUFFIN, Durham, N. C.: For the critical evaluation of the potency of any therapy, definite criteria must be established. With pernicious anemia, for example, one uses the rise in the reticulocytes. In pellagra there is no one symptom or sign the subsidence of which can be taken as conclusive evidence of remission. It is well recognized that the dermatitis may fade spontaneously when the patient is protected from the direct rays of the sun and that the patient may actually die after the dermatitis has disappeared. Therefore the subsidence of the dermatitis cannot be taken as satisfactory evidence of remission. Glossitis is a common symptom in pellagra. The authors apparently have accepted subsidence of the glossitis within a few days as evidence of the potency of the drug used. According to my experience this conclusion is not justified. Spontaneous subsidence of the glossitis occurred in twenty-six of seventy-two cases of pellagra (36 per cent). Furthermore, the glossitis recurred in sixteen of these cases after exposure of an arm or leg to the direct sunshine. I feel, therefore, that subsidence of the glossitis per se cannot be taken as conclusive evidence of remission. Improvement in the patient's general well-being, associated with subsidence of the dermatitis, glossitis, diarrhea and dementia, if present, and absence of relapse after exposure to sunshine constitute the only conclusive evidence of remission. However, since many other deficiencies result in a picture similar to that seen in pellagra, I feel it extremely unwise to make the diagnosis of pellagra or even of subclinical pellagra in the absence of a characteristic rash or a reliable history of one. I have found that small doses of nicotinic acid (1.5 mg. per kilogram of body weight, from 70 to 100 mg. daily) result in prompt recovery and are as effective as doses ten times as large in the average case of acute pellagra or for blacktongue. Large doses of nicotinic acid, 1 Gm. daily, invariably result in unpleasant sensations. Ten students were given 1 Gm. a day, divided into four doses. In every case flushing of the face and neck occurred. In two cases nausea and vomiting developed. One student was quite ill for twenty-four hours. In two cases marked cyanosis of the finger nails developed and disappeared at the end of twenty-four hours. Furthermore, Dr. Chen has reported that the daily administration of 2 Gm. of nicotinic acid to two dogs over a period of twenty days resulted in the death of both dogs. It should be emphasized, therefore, that the drug is definitely toxic, and the indiscriminate use of large doses is to be deplored.

DR. MOHAMMED ABDO ABEASY, Cairo, Egypt: It is a great privilege to be allowed to speak before such a learned gathering. I feel highly honored and thankful for the circumstances that brought me to San Francisco during this time. Egypt is concerned with the question of pellagra and its treatment with nicotinic acid. The work published by Dr. Harris in England,

Dec. 18, 1937, was in part done in Egypt by Professor Ali Hassan, and this work was arranged by the Nutritional Laboratory in Cambridge when I was working there with Dr. Harris. I am inclined to agree with Dr. Spies in considering pellagra a multiple deficiency disease. It is reasonable that the victims of pellagra miss many things in their diet other than nicotinic acid or one of its compounds. The fact that the peripheral neuritis responds only to a supplement of vitamin B<sub>1</sub> and that pellagrins responded to nicotinic acid better when they were receiving a well balanced diet is in favor of this view. It remains only for future investigation to disclose whether more substances are involved in pellagra and if so their role in the prevention and cure of the disease. The history of pellagra in Egypt is linked with the introduction of maize into the country. The first cases recorded appeared four or five years after the introduction of this crop. In Lower Egypt, where more maize is grown and consumed by the peasants than in Upper Egypt, owing to the different systems of irrigation in the two parts of the country, pellagra is more prevalent. Pellagra in Egypt is in the nature more of a secondary deficiency disease than of a primary one. Genuine pellagra does occur because of a lack in the diet of the factor or factors concerned. In a greater percentage of cases, however, it is due to lack of absorption of the factors concerned, although they are present in the diet, because of severe gastrointestinal disturbances caused by intestinal parasites, mainly *Schistosomum mansoni* and *Ancylostoma*. Members of one family, who are sharing their food and eating nearly the same quantities of it, are some of them victims of pellagra while the others are not. Those who are the victims are nearly always found to be heavily infested with intestinal parasites, and once they are freed from these parasites the pellagra is cured without any change in the diet. In Lower Egypt, where the perennial system of irrigation operates (and this system exposes the farmers much more to infection, with *Schistosomum mansoni* especially), schistosomiasis is more prevalent than in Upper Egypt, where the basin system of irrigation is generally adopted, and, as expected, pellagra also is more prevalent in Lower Egypt. Pellagra in Egypt is not confined to the poorer classes of the community as it is in the United States; it also has victims among the richer classes who are subject to the evils of these intestinal parasites.

DR. J. N. BAKER, Montgomery, Ala.: It was an Alabama physician, Dr. George H. Searcy, who first reported pellagra in endemic forms. His report, made in 1907, contributed notably to the study of the disease and had the highly beneficial effect of making not only the medical profession but the general public pellagra conscious. It told of the existence since 1901 of formerly unrecognized pellagra in the Mount Vernon (Ala.) insane asylum. Pellagra was responsible for 306 deaths in Alabama in 1936, divided almost equally between the white and the Negro races; a rather significant fact, since the white population outnumbers the Negro almost two to one. For the population as a whole the death rate for pellagra was 10.8 per hundred thousand. The rate for white people was 8.2 and for Negroes 15.4. A deficiency disease like pellagra can be expected to be more prevalent and more fatal in communities where standards of living are low, and the study of pellagra which has been mentioned emphasized this fact so far as this state is concerned. Some time ago the Tennessee Valley Authority made public the results of a study of spendable per capita income in several Southeastern states and also of per capita spendable income by counties within certain states. The statisticians found that the per capita spendable income of Alabama as a whole was \$214, which may appear low to persons from wealthy industrial states. Four of the thirteen counties having a death rate for pellagra of 15 per hundred thousand of population or higher were shown to have spendable incomes of less than \$100 a year. It is a medical axiom that death rates, both the general death rate and the rates for specific diseases, reflect at least in part the adequacy or inadequacy of medical care. Thus one would expect that the counties having an unusually high death rate for pellagra would have inadequate medical service. This is true so far as Alabama is concerned. Of the thirteen counties having an abnormally high death rate for pellagra, all but four actually have fewer

physicians than they had a quarter of a century ago. These four apparent exceptions to the rule are the counties already mentioned—as having an unusually high per capita spendable income. Study has thus given added strength to the assumption that living standards, medical care and other physical factors play a vitally important part in the killing power of pellagra and that, contrary to a widely held belief, the death rate does not go up as a consequence of prosperity or come down as a consequence of economic distress.

DR. JAMES E. PAULLIN, Atlanta, Ga.: Since 1907 I have been interested in pellagra, for at that time there was a tremendous amount of it in the South. In attempts to confirm the existing theory as to the etiologic factor, it was soon found that maize had nothing to do with its prevalence. Since that time various efforts have been made to diagnose early pellagra and to institute proper treatment. I agree with the authors that dermatitis is not always necessary for a diagnosis of pellagra. Patients without any other evidence of pellagra may have the dermatitis, and there may be innumerable gastrointestinal and nervous symptoms that establish a diagnosis of pellagra without dermatitis and without its production on exposure to the sun. While the diagnosis may be a question for debate, there isn't any question about the beneficial results of nicotinic acid in patients who have pellagra without extensive dermatitis. The authors have not painted the dramatic improvement which will occur within twenty-four hours in a patient who is part of the time a bed and the remainder of the time on a bedpan and has a most intense, ulcerative, inflamed lesion of the mucous membranes of the mouth. In from twenty-four to forty-eight hours after the administration of nicotinic acid he is able to occupy the bed in comfort and is able to take nourishment and retain it; such a transformation is rather remarkable. Nicotinic acid does not produce rapid disappearance of the dermatitis, but with the discovery that this very useful drug overcomes the clinical syndrome this matters not so very much. The drug is a wonderful contribution to clinical medicine and to the health and comfort of many sufferers.

DR. A. J. CARLSON, Chicago: I have followed the problem of pellagra with a great deal of interest since the days of Goldberger. I want to ask one question and speak one word of caution. I am informed that in the Carolinas the Red Cross has for years supplied poor families with an abundance of yeast and that despite taking it (or presumably taking it) the families have periodic ups and downs with so-called pellagra. I wonder whether the authors have any explanation of this, assuming that the information is correct. This leads me to another point, the point of caution, hinted at by several of the discussers, particularly Dr. Abbasy. If pellagra is a deficiency disease and if nicotinic acid really cures any of the symptoms, nicotinic acid must be a food. Also one should not be too enthusiastic, in view of what is known regarding the deficiency in all other aspects of the diet of the people affected. Nicotinic acid, while it may relieve and cure suddenly some of the symptoms of pellagra, can probably not overcome a general dietary deficiency. So I think that in the long run nicotinic acid will not relieve either the medical profession or society of the necessity of looking for a more nearly optimum diet for the great portion of the population affected. It would be curious indeed if there was only one factor, namely nicotinic acid, in the pellagra complex. The physician may be deceiving himself if he thinks that the patient is all right when he has recovered from the acute stage with the aid of nicotinic acid. That is my word of caution. I do not think that Dr. Baker intended to say that the medical profession is responsible for pellagra in Alabama.

DR. J. N. BAKER: I think that the problem is one of economics.

DR. A. J. CARLSON: Not entirely. It may be a case of economics for people who live in the city and so have to buy every item of food. It is not a mere problem of economics in the case of people who have an acre of land, but not the sense to raise food on it.

DR. P. J. HANZLIK, San Francisco: I was glad to hear the discussion by Dr. Ruffin because it was the first time that

I have heard some caution expressed about the use of this agent. Pharmacologists know that a therapeutically useful agent is generally also toxic. Although nicotinic acid is far removed chemically from nicotine, the patients reacted with effects on the circulation, nausea and vomiting and other symptoms. This suggests that nicotinic acid shares some of the actions of nicotine. Apparently it is going to be used repeatedly, and it is a symptomatic remedy, at least at present. Whether it is a drug or something else makes no difference. It is being used extensively, however, and another word of caution, in addition to that of Dr. Carlson, therefore seems to be in order. I should like to suggest studies of the action of this agent over long periods, small and large doses being used and evidence of chronic intoxication being sought. What will the drug do under these conditions to the blood, to the viscera and so on? When nicotine is used in this way over long periods it is injurious. I offer the suggestion that nicotinic acid be used more cautiously than it appears to be, especially in view of the large doses that are employed.

DR. WILLIAM DEKLEINE, Washington, D. C.: Dr. Carlson mentioned the work of the American Red Cross. In the period from 1927 to 1934 the Red Cross distributed over a half million pounds of powdered yeast. The highest aggregate death rate for pellagra ever recorded in this country in the thirteen Southern states where the disease prevails most extensively occurred in 1928. After the distribution of a half million pounds of powdered yeast and the introduction of gardening the rate was gradually reduced until 1935, when it was 60 per cent below the 1928 rate. Dr. Baker said that pellagra is largely an economic problem. It is just that. The tenant farmers in the South buy their food at the corner grocery or commissary. They do not grow it on the farm. Gardening has until recently been a lost art on the cotton plantations of the South. It is coming back slowly, now that plantation owners and tenants have learned its value. The food purchased in the stores is the cheapest kind—fat meat, meal, molasses and so on—food that does not contain the pellagra-preventive factor. That is why the death rate for pellagra is so high. Until it is made possible for people to get the food they need pellagra will not disappear. Is it the opinion of Dr. Spies and his co-workers that nicotinic acid is the same as the pellagra-preventive factor of Goldberger? Judging from what Dr. Ruffin has said there is some doubt. In view of the importance of pure yeast as a control measure, is nicotinic acid equally effective and can it take the place of yeast, or must further experimentation be awaited? I am inclined to think that physicians should wait until they know more about its effects. Powdered yeast has not been distributed in recent years. I am wondering now whether it should again be distributed to people who cannot buy it or whether nicotinic acid should be substituted. My own experience would lead me to believe that the use of pure yeast is still the most effective control measure.

DR. TOM DOUGLAS SPIES, Cincinnati: I am overwhelmed with the pertinent discussion of this paper. Nicotinic acid is a constituent of food, and antipellagic foods such as yeast, wheat germ and liver are rich in nicotinic acid; foods such as corn meal, corn syrup and fat meat, which predispose to pellagra, contain little if any nicotinic acid. Contrary to Dr. Ruffin's impression, the dose of nicotinic acid prescribed for the treatment of pellagra is necessarily inconstant, because of the variation in the manifestations and severity of the disease. If Dr. Ruffin cured all of his pellagrins with only 70 mg. of nicotinic acid, given orally, he must have been dealing with mild forms. When he does preventive work with pellagrins he will note that the curative dose for one is not sufficient to prevent the development of the disease in another. To prescribe too small a dose is to run a risk and to lengthen unnecessarily the convalescence; to withhold nicotinic acid from severely ill pellagrins is to deprive them of the best single therapeutic drug now known. In regard to Dr. Mackie's point that the requirement for nicotinic acid seems greater in the alcoholic patient than in the patient with endemic pellagra, we found that the response to adequate amounts of nicotinic acid was uniformly dramatic in the series of cases, including

cases of both endemic and "alcoholic" types, studied at the Cincinnati General Hospital during September 1937. In reporting these observations before the Central Society for Clinical Research in Chicago, Nov. 5, 1937, we stated that nicotinic acid was an antipellagic factor and was life saving for moribund patients. Subsequent publications have confirmed our observations. We recommend that all patients with pellagra be given a well balanced diet, but if such a diet is not obtainable or if the patient is unable to ingest it, nicotinic acid should be used as a specific therapeutic agent. Although the minimal curative dose has not yet been determined, we have found 500 mg., in doses of 50 mg. each, given over a period of twenty-four hours, a safe, effective and cheap remedy. Concerning the effect of sunlight, no one at present is in a position to state anything with absolute certainty. Sunlight may precipitate certain lesions, but it does not account for all and is not of nearly so much importance as is improper nutrition. We are just as much interested in why in the majority of cases reported by Dr. Ruffin there was no effect from exposure to sunlight as we are in the cases in which there was such an effect, since in these cases, so far as Dr. Ruffin has described, there was the same environment, the same type of food was ingested and the pellagra was of similar severity.

## HEARING AIDS FROM OTOLOGISTS' AUDIOGRAMS

AUSTIN A. HAYDEN, M.D.

CHICAGO

The first hearing aid man used, and he alone of all animals uses any artificial means to increase hearing, was the palm of his own hand. By cupping his auricle he focused and thereby intensified sound waves on the ear drum. To this day the hand is the most universal hearing aid.

Mechanical aids—tubes and trumpets of almost every kind, shape, curve, composition and construction, as

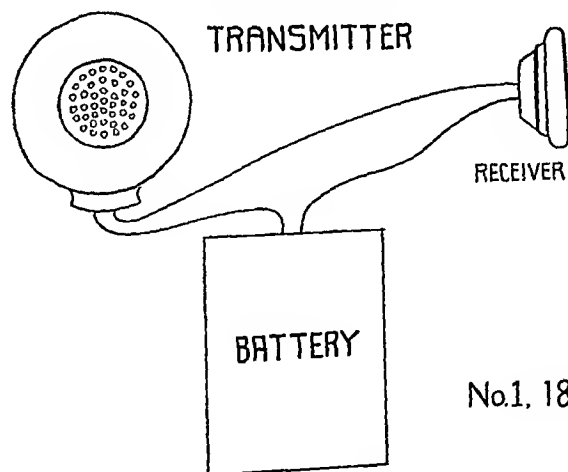


Fig. 1.—Alexander Graham Bell's original hearing aid.

well as fans, canes, chairs and innumerable other devices of the most ingenious design and elaborate construction—are mute evidence of an insatiable longing for better hearing.

A primitive transmitter, battery and receiver made up the original electric hearing aid that Alexander

Read before the Section on Laryngology, Otology and Rhinology at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 15, 1938.  
As 95 per cent of the approximately 50,000 portable instruments sold in the United States in 1937 for approximately \$5,000,000 were of the carbon transmitter type, only such instruments are considered in this paper.

Graham Bell constructed for his own mother. Although it amplified but little, it did focus sound waves more directly on the drum, was self retaining and had all the popular appeal of the electric gadget. From this, less than two years later, he perfected the first electric telephone.

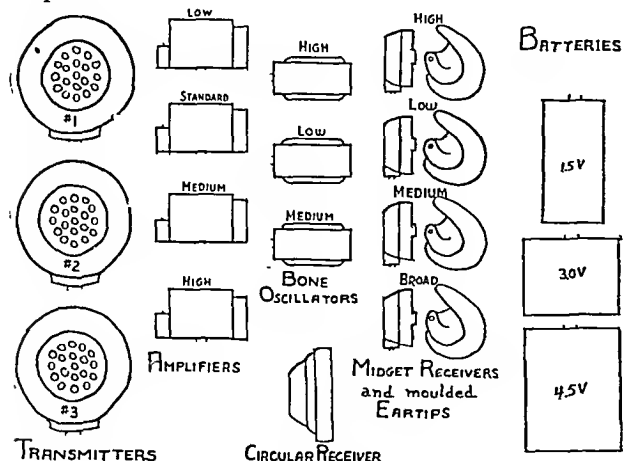


Fig. 2.—Present day portable transmitter type hearing aid parts.

Development of the electric hearing aid was at first slow indeed. Despite numerous splendid efforts for prevention and amelioration of hearing loss, including the extension of lip reading, the introduction of the fundamental tone audiometer by Edmund Prince Fowler and Harvey Fletcher and the foundation of the American Federation of Organizations for the Hard of Hearing<sup>1</sup> by Wendell C. Phillips, the deaf person remained the really "forgotten man," as far as hearing aids were concerned, until sixteen years ago. Half a century had passed since the first instrument had been fitted, and yet essentially one, and only one, type of electric hearing aid was available for general use. No important improvement had been made in Bell's original hook-up.

In 1922 Hugo Lieber introduced the midget air receiver with the shaped ear tip and two years later his "booster amplifying unit." In 1932 he brought out the first portable bone conduction hearing aid, and bone conduction was soon used in half the hearing aids manufactured.

Today the portable carbon transmitter type of hearing aid is a complex scientific instrument of considerable precision. In addition to the original telephone circular type, still occasionally used, four air receivers (high, low, medium and broad) and three bone receivers (high, low and medium) are now available. Three transmitters and four amplifiers with dry cell batteries of 1.5, 3 and 4.5 volts are in general use.

With the use of various combinations of the foregoing parts (eight receivers, three transmitters, four amplifiers, three batteries), 288 different hearing aids of this series can be assembled, each designed to correct a certain degree of hearing loss at a definite location in the hearing range. This is known as selective amplification. By use of the artificial ear, the fundamental tone audiometer<sup>2</sup> and the noise meter, the amplification of

sound by the hearing aid can be determined and charted as to both frequency and intensity.<sup>3</sup> This is termed the instrument response, and from it base-fitting charts are made.

As most tones of ordinary conversation lie between the frequencies of 256 and 2,500 cycles per second and as hearing aids are built and human ears are intended primarily to hear the human voice, the attention of patient, otologist and manufacturer is rightly centered on this frequency range. If the instrument is to fit the patient and the patient is not compelled to fit the instrument, certain considerations are essential.

For many years otologists have satisfactorily measured hearing, generally by use of the voice (whisper and forced whisper, ordinary and loud conversation), tuning forks, tubes, bells, whistles, watches, acumeters, monochords and similar devices. The use of such devices has been and is now the practice of medicine. Authorized by law and qualified by special training and otologic experience, otologists are best qualified to make these clinical tests. Especially is this true when hearing aids are to be prescribed.

The old methods of testing hearing, however, do not supply the information needed for prescribing modern hearing aids. Today hearing must be measured in

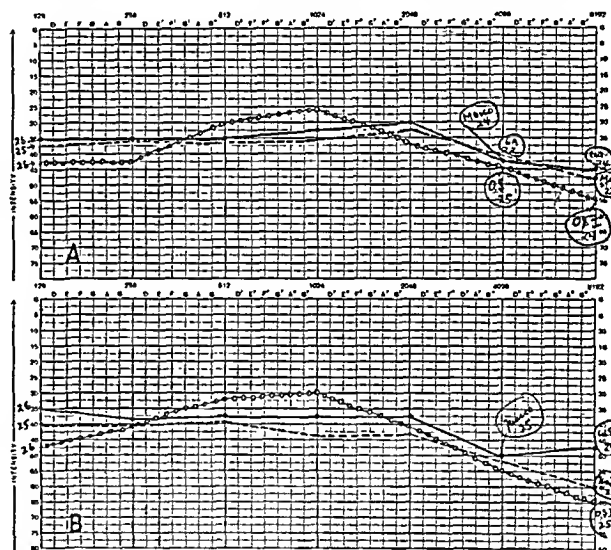


Fig. 3.—The results of comparative tests by air conduction at octave of Western Electric 6-A, Otologist Service and Maico Audiometers shown in composite audiograms of twenty-six moderately hard of hearing patients. A indicates the right ear and B the left ear. The patients were from the Chicago League for the Hard of Hearing, 64 East Lake Street, Gertrude Byrne executive secretary; the Ear, Nose and Throat Clinic, St. Joseph Hospital, and the author's office. Many of the patients who were tested at octave letter frequencies showed islands of hearing loss greater than 5 decibels at these intervals, emphasizing the necessity for continuous sweep measurements and the importance of letter calibration. In the right ear at 128 Maico reached the threshold in twenty-five of the twenty-six cases. At 4,096 Western Electric 6-A reached the threshold in twenty-two, Maico in twenty-four and Otologist Service in twenty-five. At 8,192 Maico reached the threshold in twenty-two and Otologist Service and Western Electric 6-A each in twenty-four. For the left ear the results were quite similar, as the chart shows. While these composite audiograms of this small number of cases, show some variation, establishment of a standard threshold level for calibration will probably correct much of this discrepancy. The Council on Physical Therapy of the American Medical Association will soon supply this.

terms of frequency (pitch) at octave and preferably at octave letter steps (especially for the most important range, from 512 to 2,500 cycles per second, the conver-

1. Now the American Society for the Hard of Hearing, Betty Wright, executive secretary, 1537 Thirty-Fifth Street N.W., Washington, D. C.

2. Howard A. Carter, secretary, Council on Physical Therapy of the American Medical Association, suggested the use of the word "fundamental" instead of "pure tone" to designate the vacuum tube audiometer.

3. Present models of four major manufacturers, Acousticon Corporation, Western Electric Ortho-technic, Radioear Zephyr and the Sonotone Audicle, have all been tested and accepted by the Council on Physical Therapy of the American Medical Association. Much commendation is due these manufacturers for the improvements of the past six years.

sation range) and in terms of intensity (decibel loss). For this the fundamental tone audiometer is essential.

The fundamental tone audiometer is a vacuum tube instrument that produces tones, pure within certain limits, at frequencies calibrated at full or at half octaves or better still at octave letters from 128 or lower to 8,192 or higher cycles per second and at intensities calibrated in decibels of hearing loss. Here the tone of the time-honored tuning fork loses its objectionable, but inherent, element of decay and can be increased, decreased or held constant at any frequency with any intensity for any length of time the observer desires. All information the forks gave in the classic Weber, Schwabach, Rinne and other tests is obtained with greater ease, accuracy and speed by the audiometer.

Of the five audiometers now generally available, I have tested four clinically. These are Western Electric 6-A, Sonotone-Knudsen,<sup>4</sup> Maico and Otologist Service. The results are shown in figure 3.

Wave form was good above, but not as good below, 1,024 cycles per second in each instrument. Whether this factor is really as important as most physicists and many otologists assume is yet to be determined. Actual clinical experience with deafened ears in the otologist's office, where painstaking observation is possible and the cooperation of capable hearing aid consultants is available, will furnish the deciding evidence. The final answer is the patient, not the laboratory.

The heterodyne beat circuit (two tubes) of the Western Electric 6-A audiometer required bringing to

and sweep frequency really continuous, the latter being very important for diagnosis of otologic disease and prescription of hearing aids.

The Sonotone-Knudsen, Maico and Otologist Service audiometers use single tube oscillator circuits. These are known to be more stable in performance

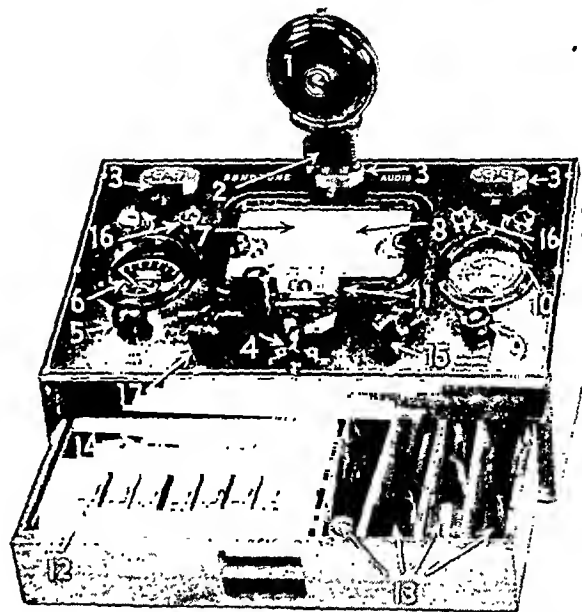


Fig. 5.—Sonotone Audioscope, a "master hearing aid." Just as the trial frame enables the patient to see through the lens combinations indicated by the retinoscope, the master hearing aid permits hearing through the component hearing aid parts as determined by the audiometer. Three of the four major manufacturers use these instruments: Radio Ear the Selsaphone, Acousticon the Auragage, and Sonotone the Audioscope. 1. Transmitter. 2. Transmitter adapter replacing the cord of the portable hearing aid. 3. Transmitter receptors, 1, 2 and 3, into which transmitter adapters fit. 4. Transmitter switch connecting receptors 1, 2 and 3. 5. Battery switch. 6. Volt meter. 7. MI amount of current passing through receiver. 8. amount of current passing through transmitter. 9. Vc circuit (taking place of control button on hearing aid transmitter). 10. Volume indicator for receiver circuit. 11. Amplifier base to hold carbon chambers in position for testing. 12. Amplifier carbon chamber, low, standard, medium, high and three specials. 13. Compartments for receivers and cords: A (white) cord, to which the four midjet and the original circular air receiver can be attached; —.2 (red), —.4 (amber), —.6 (green) cords to which high, medium or low pitched bone conduction receivers (oscillators) are attached. 14. Compartment for transmitters, air receivers and accessories. 15. Receiver switch, which throws any of the receivers (A, .2, .4, or .6) into circuit. 16. Pilot lights (white, red, amber, green), which indicate which receiver is in circuit. 17. Switch (to the left simplified, to the right amplified) by which the amplifier can be cut either in or out of circuit. The latter (to the left) is essentially Alexander Graham Bell's original hearing aid circuit.

and less noisy in operation. Their wave form, however, is apt to be poor below, but good above, 1,024 cycles per second. This is especially true if continuous sweep frequency is provided in the conversation range.

Sonotone-Knudsen has excellent wave form throughout. It is well constructed and easy to operate. Its sweep frequency, while actually continuous, is above the conversation range, beginning at 2,500 cycles per second.

Maico has good wave form throughout but its "sweep check" is not actual continuous sweep frequency. The uniform zero level is commendable. It affords a modern means of testing hearing.

The wave form of the Otologist Service audiometer is admittedly not pure below 1,024 cycles per second. The octave letter and single decibel step calibrations and the sweep frequency, which is actually continuous throughout, were found to be of great value in locating tone islands and prescribing hearing aids. The lack of purity of wave form below 1,024 cycles per second seemed of little clinical importance, especially in fitting hearing aids.

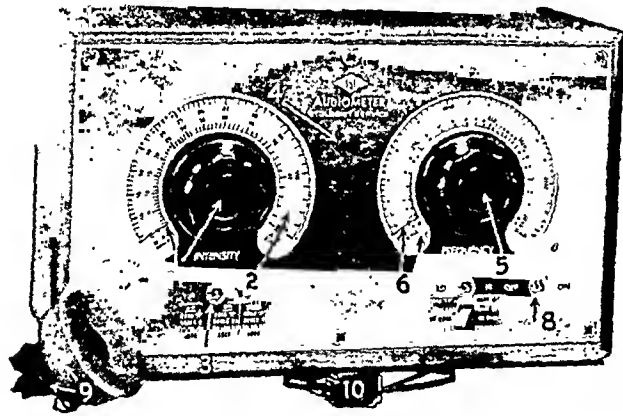


Fig. 4.—Otologist Service audiometer. Intensity calibration on the right, frequency on the left. 1. Intensity knob. 2. Intensity dial; single decibel step calibration from 0 to 60 decibels A scale and from 50 to 105 decibels for air conduction (B scale); overlapping from 50 to 60 is provided for convenience in testing at the upper end of the lower A scale and the lower end of the upper scale (B scale). 3. Intensity switch for A and B scales. For air conduction measurements both A and B scales are used, reading from 0 to 105 decibels. For bone conduction measurements, the switch is set at B but readings are made from the A scale from 0 to 60 decibels. It is to be noted that the difference (decibels) between the figures of these two scales is 45 in every instance. This is the difference between the bone and the air conduction thresholds, that much more energy being required to reach the threshold through bone conduction. 4. On and off signal light. 5. Frequency control knob, giving actual continuous sweep. 6. Frequency dial and indicator, with calibrations at octave and octave letter intervals from 128 to 8,192 cycles per second. Forty-three test points are thus available for location of tone islands and tinnitus, study of diplacusis or other acoustic problems with 18 in the most important conversation range. This is all important for fitting hearing aids. 7. Frequency switch for low (to left lower numbers on dial) and high (to right upper numbers on dial) frequency scale. 8. On and off power switch registering in signal light at 4. 9. Air conduction receiver with soft rubber ear cushion. 10. Bone conduction receiver.

zero beat (setting on calibration) frequently. Background noise was not sufficiently cut down. Dial calibration should be more legible. Wave form was good

4. Previously tested and reported in Hayden, A. A.: Audiometers and Hearing Aids, J. A. M. A. 110: 723-725 (March 5) 1938.



Excellent features were found to be common to all. Clinical observations were quite consistent. With any of the instruments, hearing can be measured more accurately and rapidly than with any previous methods or instruments. The audiogram is the best means of recording hearing loss for diagnosis of otologic disease, fitting of hearing aids and medicolegal purposes (including the detection of malingering). Standardization will increase its value. Otologists and the hard of hearing are deeply indebted to the designers and manufacturers of audiometers.

In the belief that otologists, if enabled to prescribe hearing aids from their own audiograms, could be of even greater service in ameliorating the devastation of hearing loss, and in the further belief that manu-

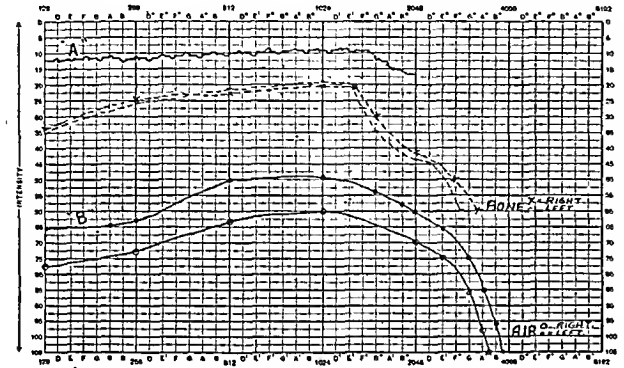


Fig. 6.—“A” shows the hearing of the patient with and “B” the hearing of the patient without the hearing aid. The difference between the lines “A” and “B,” approximately 40 decibels, shows improvement made by the hearing aid. This improvement in terms of distance would be from 2 feet without to 10 feet of hearing with the hearing aid. Audicle prescription: response chart No. B-12, audicle combination C-7-6-4.5 volts, right ear.

facturers could therewith construct even better instruments—more closely adapted to the individual patient’s needs—and could fit these more rapidly, thus reducing the fatigue error, I suggested a study of this entire subject to the executives of the Sonotone Corporation. This company was selected because its announced policy was to use only otologists’ audiograms for fitting hearing aids and because it agreed to include in the study manufacturers of other acceptable instruments and to submit all data to the Council on Physical Therapy of the American Medical Association.

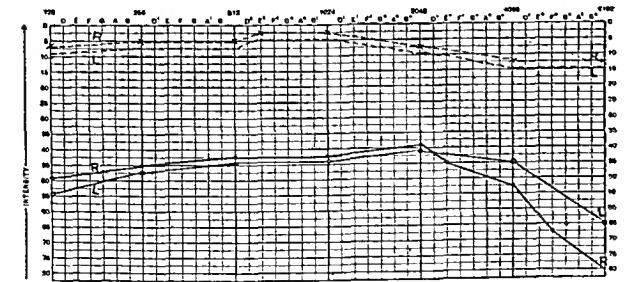


Fig. 7.—Chart of hearing of patient with conductive (middle ear) deafness; bone conduction normal or nearly normal (loss not greater than 10 decibels); air conduction poor (loss greater than 50 decibels); bone conduction aid prescribed. Audicle prescription: response chart No. B-6, audicle combination 451 C-3-4-1.5 V, right ear. Hearing improved from 3 feet to 25 feet.

For this type of deafness, “hearing windows” have recently been advocated instead of hearing aids, especially when the ear is dry. In no instance was the hearing improved as much by the operation as it usually is by a hearing aid. The indications, if any, for the operation seem thus far to be largely cosmetic.

Accordingly, in the late summer of 1937 Otologist Service, Inc., was established independent of Sonotone Corporation. The Marvel audiometer was redesigned

and rebuilt as the Otologist Service audiometer. The responses of Sonotone audicles (hearing aids) were made into Marvel’s ingenious base-fitting charts on sheets of translucent paper that could easily be placed over audiograms for comparing (“matching”) the latter’s curves of hearing loss with the former’s curves

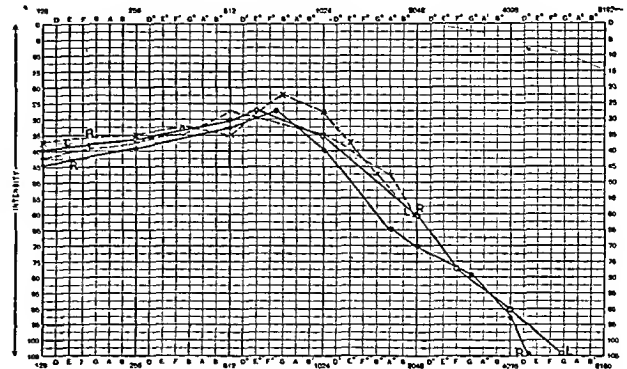


Fig. 8.—Chart of hearing of patient with perceptive (nerve) deafness; loss in air and bone conduction about equal; air conduction aid prescribed. Audicle prescription: response chart No. A-11, audicle combination 451 E-5-H-3 V, left ear. Hearing improved from 3 feet to 11 feet.

of sound amplification. Audiometers and these base-fitting charts were made available to a small group of otologists for this study.

Since Jan. 1, 1938, 1,000 audiograms have been made. Three hundred of these have been studied and “matched” and the component hearing aid parts assembled in the Audioscope (fig. 5) according to the otologist’s prescription. These “trial frame” fittings have been checked by speech intelligibility tests (syllable, word or sentence), by subsequent audiograms of the patient wearing the assembled hearing aid (fig. 6) or by both.

The results were surprisingly accurate. Ninety-two of the first hundred patients, all examined by one expe-

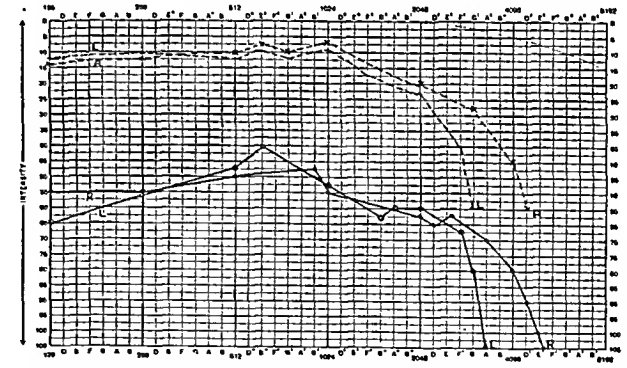


Fig. 9.—Chart of hearing of patient with mixed conductive deafness; bone conduction fair (average loss less than 20 decibels); air conduction poor (average loss greater than 50 decibels); bone conduction aid indicated. Audicle prescription: response chart No. B-6, audicle combination 451 C-3-4-3 V, right ear. Hearing improved from 18 inches to 18 feet.

rienced observer, preferred, from the 288 possible combinations already referred to, the exact combination the otologist had prescribed. One hundred and forty-six, examined by less experienced observers, chose combinations very close to the prescription, and most of the remaining fifty-four did not vary greatly in their choice from the prescription. In every instance the audiogram was invaluable in reducing the time and consequently the fatigue of the fitting.

Complete examination of the ears, nose and throat by the otologist, as well as a general physical examination by the family physician, with such laboratory and other special work as may be indicated, is essential to secure the best results. Many mistakes in fitting can be avoided by securing the cooperation of parents, teachers, nurses, ministers and members of leagues for

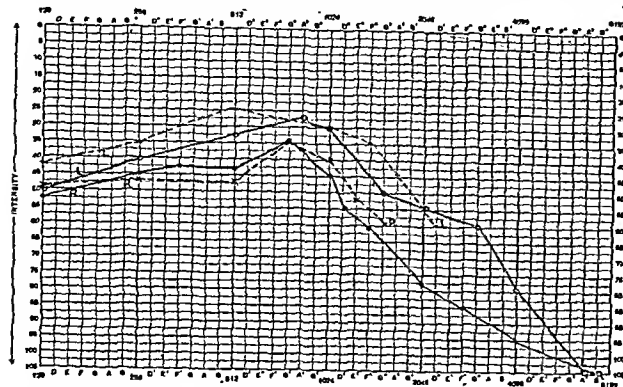


Fig. 10.—Chart of hearing for patient with mixed perceptive deafness; bone conduction loss from 10 to 20 decibels less than air conduction loss; air conduction aid prescribed. Audicle prescription: response chart No. A-13, audicle combination 451 E-1-B-3 V. Hearing improved from 18 inches to 9 feet.

the hard of hearing. With such help many more instruments will be prescribed and worn.

From this and other experience available, the following general rules are postulated: A hearing aid is indicated (1) when air conduction loss is greater than 25 decibels in each ear or (2) when air conduction loss is not greater than 85 decibels in the better ear. The vacuum tube amplified hearing aid often helps in cases of greater hearing loss.

Choice of a bone or an air conduction hearing aid depends on the character and relative amount of hearing loss by each type of conduction. The audiogram deter-

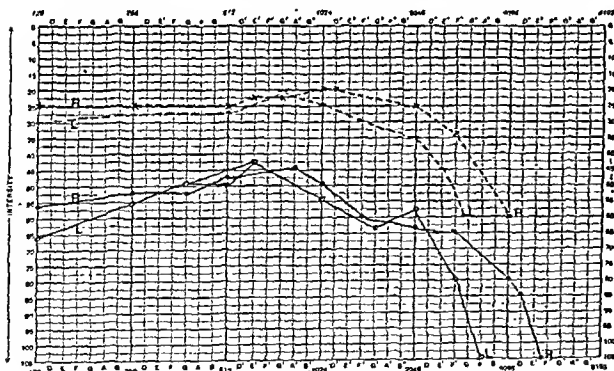


Fig. 11.—Chart of hearing for patient with mixed deafness (borderline case); bone conduction loss one half of air conduction loss; choice of air or bone conduction aid depending on (1) speech intelligibility tests with master hearing aid and (2) audiogram of patient wearing hearing aid. Audicle prescription: response chart No. B-7 or A-5, R-bone 451 C-5-4-3 V, R-air 451 E-1-M-4-5 V, right ear. Hearing improved by air conduction from 18 inches to 11 feet and by bone conduction to 13 feet.

mines this and classifies hearing loss as indicated in figures 7, 8, 9, 10 and 11.

Which ear should be fitted, right or left, is also indicated by the audiogram:

1. If the difference in air conduction is greater than 20 decibels and the difference in bone conduction is less than 10 decibels, fit the ear with the greater loss for air conduction.

2. If the difference in air conduction is less than 20 decibels and the difference in bone conduction is greater than 10 decibels, fit the ear with the smaller loss for air conduction.

Improvement of hearing, such as is shown in the accompanying table, is usually obtained.

Selective amplification is of great importance and in need of much more clinical study as well as more laboratory observation. Already the rule that "peaks of amplification" of the instrument should not be "matched" to peaks of better hearing in the audiogram is well established. Such matching produces distortion.

It seems logical and probable, but has not yet been proved to physicists' satisfaction, that the amplification of the hearing aid should be peaked at the valleys of hearing loss as shown by the audiogram. Verification by wide clinical experience (several thousand fittings) would be convincing evidence, even though full laboratory confirmation was lacking.

Despite the efforts of Newhart and his committee; the constructive genius of Fowler and Fletcher, Jones

#### Hearing Gain by the Carbon Transmitter Type of Portable Aid

Air Conduction Loss, Decibels	Residual Hearing	Improvement in Speech Intelligibility by Fitting	
30 to 40	4 to 6 ft.	12 to 16 ft.	75%
40 to 50	2 to 4 ft.	10 to 12 ft.	75%
50 to 60	12" to 2 ft.	8 to 10 ft.	70%
60 to 70	6" to 1 ft.	6 to 8 ft.	70%
70 to 80	2" to 6"	4 to 6 ft.	65%
80 to 90	1" to 2"	3 to 4 ft.	60%
90 to 100	None	???	???
Bone Conduction Loss, Decibels			
0 to 10	Overall (air conduction)	20 to 30 ft.	80%
10 to 20	loss of hearing	15 to 20 ft.	75%
20 to 30	not directly	12 to 15 ft.	75%
30 to 40	related to	9 to 12 ft.	70%
40 to 50	bone conduction	6 to 9 ft.	65%
50 to 60	loss	3 to 6 ft.	60%
60 or more		???	???

and Knudsen; the leadership of Shurly for the Section on Laryngology, Otology and Rhinology in the House of Delegates of the American Medical Association; the enthusiasm of Wherry's bulletins of the American Academy of Ophthalmology and Otolaryngology; the fine papers of Nash and others read at the 1938 meeting of the American Laryngological, Rhinological and Otological Society; the continuous interest in research of the American Otological Society, and the work of the Council on Physical Therapy, directed by Howard A. Carter and the Committee of Consultant Otologists,<sup>5</sup> otologists must immediately take greater interest in audiometers and hearing aids or else the use of the former and the prescription of the latter will be taken over by others not so well qualified to serve the hard of hearing.

Research such as Otologist Service, Inc., has initiated (coordinating the efforts of otologists, physicists and manufacturers of acceptable hearing aids) offers the ideal practical plan by which otology may continue to serve in this increasingly important field of its own domain and greatly benefit America's millions of deafened.

25 East Washington Street.

5. This committee is composed of Drs. George M. Coates, Lee Wallace Dean, Edmund Prince Fowler, Austin A. Hayden (chairman), Isaac H. Jones, Douglas MacFarlan, Burt R. Shurly, Horace Newhart and William P. Wherry, and Mr. Howard A. Carter (secretary).

WHAT AUDIOMETRY CAN NOW MEAN  
IN ROUTINE PRACTICE

ISAAC H. JONES, M.D.

AND

VERN O. KNUDSEN, PH.D.

LOS ANGELES

The otolaryngologist is aware of a criticism directed at him. He is known to be devoted to every phase of his work except one field—service to the hard of hearing. Why is this? It seems to us that the fault is both in the patient and in the physician. The lack of interest in this field is easily explained. In his work as a specialist the otolaryngologist finds his real interest, just as specialists do in other fields, in a contented and satisfied patient. The otolaryngologist often sees definite results and on occasion has the satisfaction of knowing that he has actually preserved a life. He is human, and there is nothing that pleases him so much as a grateful patient. When it comes to the problems of hearing, however, he has found it very difficult to bring about a result satisfactory to the patient. The otolaryngologist is bound to feel at some time "Oh, what's the use!" He cannot help realizing that the patient puts a low estimate on his diagnostic studies. For example, a recent letter took nine pages to explain the history and symptoms and requested that an examination be made particularly for the purpose of prescribing a hearing aid. It ended "Do you make any charge for such a study?" Usually the patient who is hard of hearing is not satisfied unless his hearing is restored.

To be sure, one should not speak of "fixed" lesions; to do so expresses an attitude of hopelessness. The day when tuberculosis had the general reputation of being a hopeless condition can be recalled. Cancer is no longer regarded as necessarily fatal; many patients are saved by early diagnosis and treatment. In the spirit which improved the prognosis in these diseases, the physician must forever struggle on in the attempt to "cure deafness." At the present time much work is being done in this and other countries that gives promise of a brighter prospect. However, although the otolaryngologist must never permit himself to have a pessimistic attitude, he must face facts. Some more or less reasonable and many bizarre methods have been tried in the treatment of the chronically deafened, only to be abandoned. The physician no longer expects the ridiculously impossible, but most patients still do.

However, the physician should not be content simply to lay the blame on the extravagant demands of the patient. He deserves criticism if he is not ready to advise and direct the patient to the fullest extent possible. He must be prepared to meet the need. He is now able with precision to measure and diagnose conditions of the middle and internal ear and then to give intelligent advice or treatment. He can also, as the ophthalmologist has done for so many years, prescribe the type of aid best suited to each patient, and in many instances he can secure an instrument that will meet his prescription. The instruments of precision for diagnosis are available, and yet very few otolaryngologists use them. It is freely admitted everywhere that a careful study of a hard of hearing patient

should include the vestibular tests and audiometric tests with a standardized audiometer in a soundproof booth. Without the vestibular tests, only one half of the ear is examined; that is, the ear is only half examined. Yet the fact remains that in 1938 many otolaryngologists do not even possess a turning chair; some at last are securing audiometers, but soundproof booths, without which any hearing test is woefully inadequate, are practically unknown.

Besides the vestibular tests and the use of an audiometer in the soundproof booth, there is another test which we have found of such value that we have used it as a routine for fifteen years—a study of the mechanism of the middle ear by a pneumatic oscillator with an electric otoscope. To "see the ear hear" is not merely an attractive thought. To a great extent it is perfectly possible to accomplish this in clinical practice. Naturally, we cannot observe the motion of the drum membrane when it is exposed to sound waves. The motion is too tiny and too rapid. The ear is wonderfully sensitive. At a frequency of 1,000 cycles a barely audible sound is heard when there is a pressure variation of only one billionth part of atmospheric pressure in the auditory canal. At this threshold of hearing the drum membrane moves one billionth of an inch. For lower frequencies the excursion is somewhat larger. For an ordinary sound, such as the voice or the average noise in the office, the drum membrane moves one millionth of an inch. Such movements we are not able to see.

Again, we cannot see the drum membrane move because it moves too rapidly. The eye has detectors for only one octave, from red to violet; double the frequencies for red are sensed as violet. In the ear there are ten octaves, from twenty to twenty thousand cycles. We cannot see such rapid movements. "How, then, can we see the ear hear?" We can at least observe the motion of the drum membrane and hammer, and to this extent we can know exactly how well this portion of the ear can hear. An oscillator with the electric otoscope causes an alternate rarefaction and condensation. We can cause the drum membrane to move about one hundredth of an inch, and such excursions are plainly visible. As to frequency, we can cause the membrane to move three, four, five or any number of times per second. In this sense we are then able to "see the ear hear." Clinically we determine stapes fixation as follows: If the turning and caloric tests and the audiometric tests in the soundproof booth reveal a normal internal ear and eighth nerve, the deafness is proved to be due to a conductive defect and the oscillator with the electric otoscope shows normal texture and normal mobility of the drum membrane and hammer handle, we can conclude that there is only one diagnosis, one definite lesion, stapes fixation.

At long last the otolaryngologist is beginning to recognize that audiometry is not only a legitimate but a necessary part of his practice. He no longer inquires "Should I have an audiometer?" but rather asks "What kind of an audiometer should I get?" Not only are otolaryngologic societies attempting to standardize tuning forks and the tuning fork tests; they have committees at work setting up many minimal standards for acceptable audiometers, and they are earnestly endeavoring to establish educational programs for the teaching of audiometry (1) to active otolaryngologists and (2) to medical students, particularly those about to specialize in otolaryngology.

From the Department of Physics, University of California (Vern O. Knudsen).

Read before the Section on Laryngology, Otology and Rhinology at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 15, 1938.



Much progress has been made during the past year, and substantial agreement has been reached by the committees of the many societies as to the minimal standards for audiometers. Briefly, the standards set forth the following specifications:

1. The audiometer shall provide at least the following tones: 128, 256, 512, 1,024, 2,048, 4,096 and 8,192 cycles.

2. The intensity of the tones shall be controllable, and intensity steps corresponding to five decibel intervals (or less) shall be identified, both for air conduction and for bone conduction.

3. The frequency of any test tone shall remain within plus or minus 5 per cent of the designated frequency.

4. The tones produced by the air conduction receiver shall be free from audible overtones.

5. Extraneous noises must be inaudible.

6. The bone conduction receiver shall not produce sound in the air to the extent that the sound reaching the tympanum can influence the validity of the bone conduction measurements.

7. The air conduction receiver shall have an acoustic power output directly proportional to the electric power input.

8. The audiometer blanks shall use the same base line for both air conduction and bone conduction. In order that all charts may present the same visual impression, it is recommended that there be a ratio of 1 to 2 between the dimensions of a 10 decibel step and that of an octave step.

Good audiometers have developed to such a degree that the otolaryngologist is now able to purchase one with the assurance that it will not be necessary to make a trade for a new one for at least five or possibly ten years.

The audiometer should be set up in a very quiet room or soundproof booth. The accuracy of many hearing tests, especially by bone conduction, will depend

noise in the room. The faint tones would still be heard if it were not for this noise. Figure 1 shows the plan of a small inexpensive booth which can be built by any good carpenter; it will prove satisfactory if located in a reasonably quiet room.<sup>1</sup> In noisy locations a double-wall type of booth, such as that shown in

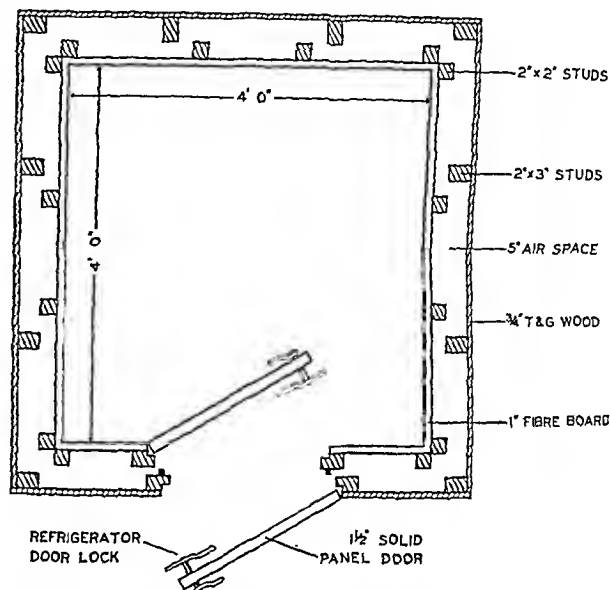


Fig. 2.—This booth is built on the principle of a "room inside of a room." That is, the inner room, with its own floor (of wood covered with fiber board), ceiling and door, is effectively separated from the outer room. The only points of contact between the two rooms are through the floor; the inner room should be supported by rubber pads as described in the legend for figure 1. The cost of this booth will be about \$150 to \$175. If ventilation is provided for this booth, care should be taken to prevent rigid connection between the outer and inner walls by means of the ventilating ducts; rubber or canvas connections will prove satisfactory. This booth will provide an insulation of about 50 decibels, but if it is to do this the doors must be locked tightly against rubber jambs and there must be effective isolation of the inner from the outer room.

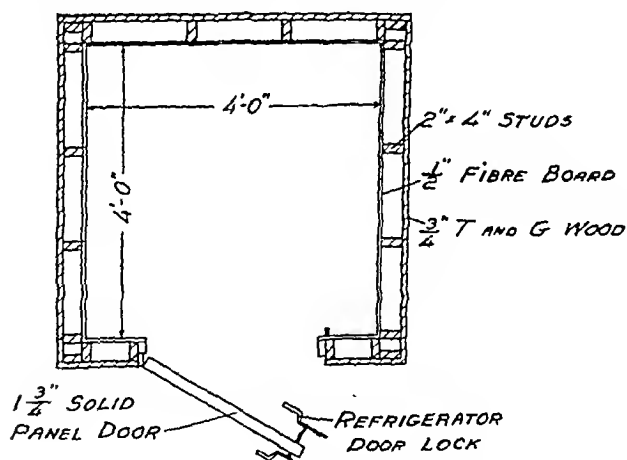


Fig. 1.—A simple and inexpensive type of booth which can be constructed for about \$100. The ceiling should be constructed in the same way as the walls; for the floor the fiber board should be applied directly to the T and G subflooring. The door jamb should be lined with soft rubber so that the door will lock tightly against the jamb and thus eliminate all threshold cracks. If there is much vibration in the room where the booth is to be located it will be helpful to support the booth on 1 inch thick live rubber pads, one at each corner of the floor, of such size that the rubber is loaded to 6 pounds for each square inch of bearing surface. (Thus, if the booth and its contents weigh 600 pounds, each pad should measure 5 inches by 5 inches by 1 inch.) This booth will provide an insulation of about 30 decibels.

directly on the extent to which the room is free from noise. If the patient can hear any noise whatever in the room, the test tones will be heard not until they become inaudible but until they are masked by the

figure 2, is recommended. If ventilation is desired it can be provided by small supply and exhaust ducts, with a small electric fan used with either duct. Both the exhaust duct and the supply duct should be at least 6 feet long, should have a cross section of not more than 1 inch by 4 inches, and should be constructed of sound-absorptive material or of galvanized iron lined with one-half inch mineral wool blanket, such as one-half inch Fir-Tex, Masonite or similar material. Such ducts offer a high attenuation to sound and therefore will prove effective in eliminating outside noise. Although ventilation is desirable for a prolonged test, it is by no means necessary for routine work.

The following case reports are included for two reasons: (1) to present our methods in the study of patients and (2) to put on record certain unusual cases, the understanding of which would have been difficult without precision measurements. In fact, without precision measurements, the diagnosis in these cases would have resolved itself largely into a matter of mere guesswork.

The cases include one of chronic catarrhal otitis media in which the progressive deafness was stopped by surgical intervention fifteen years ago; three of otosclerosis (one patient was deaf at birth, in one case deafness manifested itself after adolescence and in the third case deafness appeared at the age of 47) and one case each of arthritis of the ossicular joints, sudden deafness

1. Knudsen, V. O., and Jones, I. H.: Bone Conduction, Arch. Otolaryng. 13: 489-505 (April) 1931.

from acute syphilis, neuroma of the eighth nerve, cerebral auditory defect and deafness from psycho-neurosis.

**CASE 1.—Chronic catarrhal otitis media.** Mrs. G. L. M. had normal vestibular function and normal bone conduction. The defect was purely conductive. Each ear showed impaired mobility of the drum membrane and the hammer handle, a dull tympanic membrane and retraction, with shortening of the light spot. The patient had been becoming progressively deaf for several years. For two years she had had tinnitus, like a roaring or, at times, the ringing of bells. The tinnitus had gradually increased until it was very distressing. After tonsillectomy and resection of the septum the progressive deafness stopped entirely and the noises disappeared at once. There has been no recurrence in fifteen years.

We have been unable to find a record of a case like the following, in which not only was the child apparently born with otosclerosis but the focus had already involved the oval window and produced complete bilateral stapes fixation. No doubt there are many such cases and the only reason for their not being on record is that precision measurements are so seldom made. It is known that the focus of otosclerosis does not "appear" or suddenly develop after adolescence. Histologic studies have demonstrated this in a child aged 3½ years (Manasse), in a child aged 5 years (Siebenmann and O. Mayer, one case each), in a child aged 1 year and 10 days (Guild) and in a fetus aged 7 months (Guggenheim). After Guggenheim's observation in 1931, Bast demonstrated a similar condition in several fetuses. These authorities did not state dogmatically that the sections demonstrated otosclerosis; however, they described dystrophic bone showing the characteristics of otosclerosis.

**CASE 2.—Otosclerosis.** D. D., a boy aged 5, when first examined appeared to be a typical deaf-mute. He was able to make sounds but they were unintelligible. The mother had been in perfect health throughout pregnancy; the birth was normal in every respect; forceps were not used; the baby developed normally and had no disease in these first five years.

Dr. Gilbert Roy Owen demonstrated the presence of the bony internal ears by roentgenograms. We then considered that there probably was a lesion of both internal ears, produced before birth by an unknown cause; but audiometric measurements reversed this concept. The child was most intelligent, and by careful checking we were able to satisfy ourselves that our chart was accurate. In the right ear the average hearing by air conduction was 42 per cent but by bone conduction was 80 per cent. The left ear showed an average air conduction of 30 per cent but bone conduction was 80 per cent. The child heard well with the high quality amplifier both by our large laboratory model and by our portable model. His parents volunteered the information that he seemed to hear better in the presence of a noise. It therefore appeared evident that, although he did not have perfect internal ears, what kept him from hearing was definitely a conductive defect, bilateral. The oscillator with the electric otoscope showed normal texture and mobility of the drum membrane and normal mobility of the hammer handle in each ear. So perfect was the mobility that the impression was that he had never had any trouble of any kind in the middle ears, and the parents confirmed this. It seemed certain that no chronic adhesive process within the middle ears could be responsible for such a total conductive defect. In brief, he had a conductive impairment not due to a lesion of the middle ear. The function of each cochlea not only was good but was far better than the air conduction. There was only one location and one explanation to account for this conductive defect—stapes fixation in the oval window.

With a specially constructed instrument, a high quality amplifier, this boy can hear well. There is every hope that he will be able to speak perfectly after education of his cerebral

auditory centers. We then examined his sister, aged 7 years, and she showed a similar picture, although not of such marked degree.

**CASE 3.—Otosclerosis.** Miss E. G. L., who had typical otosclerosis, exhibited impairment of hearing shortly after adolescence (fig. 3).

**CASE 4.—Otosclerosis.** Miss J. L. showed perfectly normal vestibular function by means of the turning and caloric tests (fig. 4). The bone conduction showed good cochlear function (fig. 5). The hearing defect was purely conductive. The oscillator with the electric otoscope showed normal mobility and texture of the drum membrane and normal mobility of the hammer handle, indicating that the lesion was stapes fixation. Examination gave the same results for the two ears. At first the differential diagnosis was between arthritis of the ossicular joints and otosclerosis. The patient had had arthritis of the spine for years, with occasional exacerbations. However, the normal mobility of the visible parts of the conducting mechanism and the typical picture of otosclerosis demonstrated in her sister seemed to remove any doubt and to make the diagnosis one of otosclerosis.

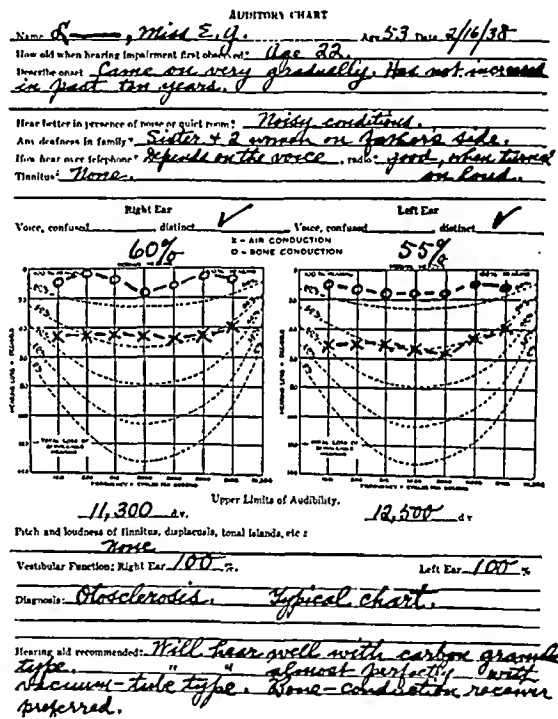


Fig. 3.—Auditory chart, case 3.

Whereas patient 2 appeared to have been born with complete stapes fixation from otosclerosis, patient 4 had excellent hearing until she was 47 years of age. These two cases show that otosclerosis can involve the conducting mechanism at a widely variable time of life.

**CASE 5.—Stapes fixation from arthritis.** Mrs. H. C. had had a severe illness, from which she nearly died, which began with a throat infection, took the form of staphylococcal bacteremia and resulted in severe osteomyelitis of the spine. In the midst of this illness she became deaf in the right ear. Two years later the air conduction curve for this ear showed almost no hearing for the lowest tones, better hearing for the high tones and an almost normal upper limit of hearing, the classic curve of conductive deafness. Bone conduction was normal. The Weber test markedly referred to the right, the deaf ear. The oscillator with the otoscope demonstrated normal texture and mobility of both drum membranes and normal mobility of each hammer handle. In other words, there appeared to be nothing in the middle ear itself to account for this purely

conductive impairment in the right ear. A diagnosis was made of stapes fixation in the right ear, due to arthritis.

The patient was naturally fearful that she had otosclerosis and that she would soon become deaf in her other ear. She was assured that she did not have otosclerosis; that the lesion had happened once and for all, caused by the bacteremia, and

with saligenin and ten injections of neoarsphenamine. The patient promptly recovered his vision and the hearing was restored, according to the statement of the patient, to a degree "as good as it was before this happened." During this experience it was possible to observe the successive stages of improvement by audiometric measurements, just as Dr. Donohoe could watch the fundi improve.

**CASE 7.—Neuroma of the eighth nerve.** R. S. had deafness which was easily diagnosed by the following sequence of events: The vestibular and auditory tests gave the usual picture of a neuroma of the left eighth nerve. Spontaneous nystagmus suggested that the neuroma disturbed the brain stem. When looking to the right the right eye went down; on looking to the left it went up and jerked to the left and down, and on looking up it went outward. At the first examination we asked the patient if he had any tumors in other parts of his body, and he showed a scar on his thumb, saying that a tumor had recently been removed. He was sent at once to Dr. Ray Taylor with a tentative diagnosis of multiple neurofibromatosis of von Recklinghausen (fig. 6). The remarkable report read: "There is indentation in the superior border of the petrous process on the left side. Immediately posterior there is an area of calcification, 1 cm. in diameter, lying close to the petrous portion of the temporal bone. This calcified mass appears to lie posterior and probably close to the internal auditory meatus." Then came the histologic report of the tumor that had been removed from the thumb—neurofibroma.

**CASE 8.—Cerebral auditory defect.**—E. F., a man aged 22, was generally regarded as a deaf-mute, although it was realized by those who knew him that he was not entirely deaf. He was obviously a mute in the sense that he was unable to talk; he could utter only meaningless noises. To our surprise we found that he could hear well. Not only did all tones and noises register in his cerebral centers, but he had good hearing for all tones. To check this fact, three audiograms were made on

TESTS OF THE VESTIBULAR APPARATUS

Surname Miss J. First Name Miss J. Middle Name  Date 1/21/38

SPONTANEOUS		PORTING	
RIGHT ARM	LEFT ARM	RIGHT ARM	LEFT ARM
Looking straight ahead <u>None</u>	Nystagmus <u>None</u>	<u>T</u>	<u>T</u>
Looking to RIGHT <u>Slight to</u>	Nystagmus <u>None</u>		
Looking to LEFT <u>Slight to</u>	Nystagmus <u>None</u>		
Looking UP <u>None</u>	Vertigo <u>None</u>		
Looking DOWN <u>None</u>	Falling <u>None</u>		
	Romberg <u>Good</u>		
	Head to right <u>Good</u>		
	Head to left <u>Good</u>		

TURNING			
To RIGHT	Nystagmus <u>Normal</u>	to	to
Duration <u>20 Sec.</u>	Motion sensing <u>30 seconds</u>		
Amplitude <u>good</u>	Post-pointing <u>None</u>		
<u>rapid</u>	Pallor <u>None</u>		
	Sweat <u>None</u>		
	Nausea <u>None</u>		
To LEFT	Nystagmus <u>None</u>	to	to
Duration <u>20 Sec.</u>	Motion sensing <u>28 seconds</u>		
Amplitude <u>Similar</u>	Post-pointing <u>None</u>		
	Pallor <u>None</u>		
	Sweat <u>None</u>		
	Nausea <u>None</u>		

CALORIC			
Douche RIGHT	Nystagmus <u>Normal</u>	4 in 3 in R	about
After min. <u>30 Sec.</u>	Motion sensing <u>Normal</u>		
Amplitude <u>Good</u>	Post-pointing <u>Good</u>		
Total: min. <u>40 Sec.</u>	Pallor <u>None</u>		
	Sweat <u>None</u>		
	Nausea <u>None</u>		
Head Back	Falling <u>good to right</u>		
Amplitude <u>Large</u>	Duration <u>Full normal 4 in 3 in R</u>		
			100% function
Douche LEFT	Nystagmus <u>Normal</u>	4 in 3 in L	about
After min. <u>35 Sec.</u>	Motion sensing <u>Normal</u>		
Amplitude <u>Good</u>	Post-pointing <u>Good</u>		
Total: min. <u>45 Sec.</u>	Pallor <u>None</u>		
	Sweat <u>None</u>		
	Nausea <u>None</u>		
Head Back	Falling <u>good to left</u>		
Amplitude	Duration <u>Full normal 4 in 3 in L</u>		
			100% function

Fig. 4.—Results of vestibular tests, case 4.

that there was no reason for her to anticipate any trouble whatever in her left ear. Of course we had some mental reservations in stating such an opinion, but nine years has passed and she still has perfect hearing in her left ear. Clinically, this would seem to establish the diagnosis of arthritis of the stapes in its oval window.

**CASE 6.—Deafness and blindness from acute syphilis.** Mr. G. A. G. on arising in the morning noticed that he was deaf in both ears and had loud tinnitus like the noise of a steam whistle. He had determined to commit suicide. Although he was a cabinet maker of some intelligence, he followed the advice one reads in advertisements and went to a hearing aid concern for "diagnosis and treatment." Probably the only reason that he left the audiometrist and came to us, after many weeks was that he could not hear with any kind of a hearing aid that the audiometrist offered.

In this case it was obvious that the sudden deafness overnight was due to either hysteria or neuritis of the eighth nerves. The diagnosis was of course determined in a minute or two, simply by the turning chair. If he had shown normal vestibular responses we would have known at once that the condition was hysteria. The first glance at his throat showed a typical picture of acute syphilis. There were mucous patches on the oral mucosa and left tonsil, and the tonsillar region was swollen almost as in quinsy. Dr. William D. Donohoe found that he was also going blind. The disks were swollen and the margins lost; the arteries were of normal size; the veins were congested and tortuous and appeared to bulge as they passed up and over the edge of the swollen disks; physiologic excavation was not yet wholly obliterated.

The Wassermann test with a 1:40 dilution of serum showed a reaction of 4 plus. Dr. Herbert A. Huntington gave vigorous treatment with a course of fifteen injections of iodobismutal

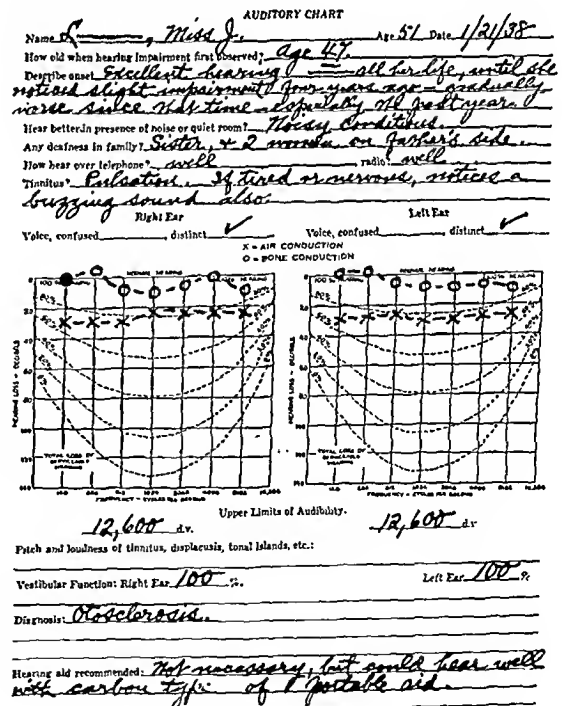


Fig. 5.—Auditory chart, case 4.

different days. He could reproduce tones; if someone hummed a certain note he could hum the same note. He could not speak, simply because he could not draw on the memory pictures of conversation that he had heard. He was unable to register and store up a concept of names and words. When he was 5 years old the family suddenly noticed that he did not understand what was being said to him and reached the con-

clusion that he was deaf. At the age of 2 he had had an illness diagnosed as encephalitis. At the age of 13 he suddenly jumped at the sound of an automobile horn, and the family then realized that he could hear. They naturally thought, however, that he could hear very little, because he did not understand speech and could not repeat words that were said to him.

The neurologic report of Dr. Eugene Ziskind gave the following facts:

1. Visual agnosia: There was no visual agnosia for objects or figures. The patient knew only a few words, possibly twelve; he was able to recognize the word "cat" in writing. His brother stated that it had never been possible to teach him the sign language for letters but that he was able to learn the code for words and communicated by this method. He could match colors shown him, but the only one he could recognize by name was blue. His brother stated that blue was one of the few words in his vocabulary. There was no loss of orientation, since the previous year the patient had hitch-hiked from Oklahoma to California. There was no acalculia; the patient was able to go to the store and did not permit himself to be short changed.

2. Auditory agnosia: He recognized the few words he knew. The examiner pointed to "cat" and said "Is this mamma?" He shook his head in the negative and said "titty" for "kitty." The examiner then pointed to the word "mother," which was one of the words he had written, and asked "Is this show?" He shook his head in the negative. When asked "Is this mamma?" he nodded in the affirmative. When asked to repeat, mamma, show and kitty, he did so. When asked to repeat words that he did not know, such as house, he failed to do so or made a sound which was irrelevant.

3. Aphasia tests: There was no spontaneous speech. He could repeat only words he knew. He did not understand the spoken voice, his understanding apparently being limited to the words he knew. He did, however, communicate by the sign language.

There was no apraxia and no agraphia. The patient wrote his name spontaneously, copied, transposed from print to writing and wrote from dictation the words he knew.

The diagnostic impression was that the patient probably had lethargic encephalitis in the epidemic of 1917-1918, at the age of 2 years, at which time a focal lesion produced partial motor aphasia and incomplete auditory aphasia. The patient showed partial visual agnosia for words, but since the pathologic lesion occurred before he learned to read or write it may be that the deficiency in this direction is to be ascribed to lack of training rather than to an organic loss. If one is to assume that the patient had visual agnosia in addition to the deficiencies noted, no focal localization is possible, and it may well be that the observations are to be explained by a diffuse lesion such as occurs in lethargic encephalitis.

CASE 9.—*Deafness from psychoneurosis.* Mrs. L. F. S., a gentle lady, had always prided herself on her acute hearing in both ears. Then came the railway accident. A wheel broke and the car went off the track; it did not turn over but pounded along over the ties. All the passengers were naturally excited, and some were in terror. The patient received no blow on the head. Three weeks later she noticed that she was deaf in her right ear and began to have pains on the right side of the head, especially above the right eye when stooping forward. Later she became hard of hearing in the left ear also. Several audiograms were made, and the curve was different each time. For example, in the right, deaf ear she had an average the first day of only 25 per cent of hearing, the next day of 40 per cent and a few days later of 60 per cent. The vestibular tests showed actually hyperactive responses to turning and prompt responses to douching. It was clear that this elderly patient, as a result of a terrifying experience, had suffered a complete change in her outlook on life, and the diagnosis was clearly psychoneurosis.

It is a comfort to us to know that we need no longer have any concern about making a diagnosis of a functional hearing defect. The patient cannot deceive the audiometer. All that is necessary is to make two

or more tests. Of course the differential diagnosis between psychoneurosis and malingering is determined by other factors, especially the judgment of the examiner.

#### THE PRESCRIBING AND FITTING OF HEARING AIDS

The prescribing and fitting of hearing aids will never become as intricate as the art of prescribing and fitting eyeglasses; that is, the kinds and gradations of sound amplification needed are fewer than the many kinds and gradations of light refraction. The audiometer provides a necessary and dependable guide in determining the type of amplification best suited to each individual. The prescribing of hearing aids is a service the otolaryngologist should now be prepared to render.

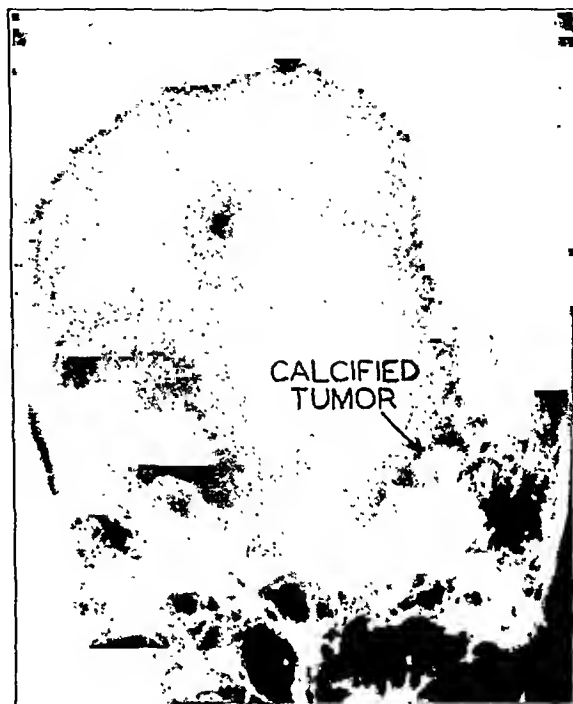


Fig. 6.—Neuroma, case 7.

Obviously, the responsibility for audiometry and the prescribing of hearing aids can and should be assumed by the medical profession. Persons who practice audiometry should have a thorough knowledge of the relation of impairments of hearing to the diseases of the ear, nose and throat and to the entire human body, but they must know more than this. They must learn the basic facts of physical and physiologic acoustics and learn how to apply these facts to the technique of audiometry and the prescribing of hearing aids. This is not a difficult task. Although training in audiometry ultimately should be given by the medical schools, much can be done in the meanwhile by those otolaryngologists and collaborating physicists who are familiar with the technique and who recognize the importance of rendering audiometric service to the public. The acceptance of this responsibility by the physician will help to keep audiometry and the prescribing of hearing aids where it belongs—in the medical profession. If otolaryngologists do not assume this responsibility and assume it without delay, there will soon be a new type of practitioner, "the audiometrist," who will operate outside the control of medical standards.

The prescribing of hearing aids should be based on the following tests:

1. Careful audiometric tests both by air conduction and by bone conduction for the purpose of determining (a) the type of impairment and (b) the extent of the impairment throughout the useful range of hearing. In cases of nerve impairment it is necessary to determine the hearing loss not only for tones of threshold intensity but for tones having intensities comparable to those which comprise normal speech and music.

2. Speech articulation tests with different types of selective amplification. The audiometric tests ordinarily will indicate the approximate type of amplification with which the patient will hear best; but this should be confirmed, or modified as required, by actual speech tests, which will reveal the type of amplification with which each patient will hear best.

The technic of prescribing and fitting aids is one which calls for close cooperation between the medical profession and the manufacturer, similar to that which now exists between ophthalmologists and optical concerns. The doctor has the responsibility, therefore, not only of making audiometric tests but also of referring his patients to reputable concerns which are competent to make the fitting and guarantee their instruments.

Respecting the criteria for prescribing hearing aids, the following already may be regarded as established:

1. The prime requisite for every hearing aid is high quality amplification; that is, amplification which is free from the "peaked" responses and nonlinear distortions which have been so characteristic of the carbon type of portable aid used in the past. In the carbon type of aid the distortions are so great and the variability of amplification so unreliable that it does not seem feasible for the otolaryngologist to attempt to prescribe a particular type of selective amplification with such aids. Only in the vacuum tube type of amplification is the quality good enough to justify the planned control of amplification at different frequencies in such a way as to meet best the needs of each prescription.

2. In general, air conduction hearing aids should be prescribed for persons who have primarily nerve or perceptive impairment, and bone conduction aids should be prescribed for those who have predominantly conductive impairment. As yet it is not possible to set down any fixed rule for the prescribing of bone conduction aids or air conduction aids for that large group of patients who have mixed conductive and perceptive impairments. The work of our colleague Dr. Norman A. Watson has shown that persons with normal hearing can hear as well by bone conduction as by air conduction, provided the amplification is sufficient. However, the rule previously stated will be found to be a good one for the two extreme classes; that is, air conduction aids for persons in whom perceptive impairment predominates, and bone conduction aids for those in whom conductive impairment predominates. Often the convenience of wearing the aid will be an important factor. Women may prefer a bone conduction aid because they can conceal the receiver behind the ear. Men may prefer an air conduction aid because a molded ear piece obviates the need of a head band. There is nothing mysterious about bone conduction; it simply makes use of another route to the cochlea. If sufficient sound energy of the proper frequencies reaches the cochlea it matters little whether it gets there by air or by bone conduction.

3. For persons with purely conductive impairment or even predominantly conductive impairment, an amplification at each frequency equal to the hearing loss in decibels minus 20 decibels is found to be adequate. Owing to the presence of noise, which interferes with the hearing of every one, at least to an extent of 20 decibels, it is not necessary to provide as much amplification as the audiogram indicates; in other words, all persons speak much louder than would be necessary if they were in a quiet place. It will be found that the amount of amplification here indicated, namely 20 decibels less than the hearing loss, will be adequate for good hearing and also will provide a more comfortable level of loudness than would a greater amplification. Further, for such persons, experience shows that uniform, high quality amplification usually will be as satisfactory as any kind of selective amplification. The only exception to this rule would be for those who show a marked variation in hearing acuity throughout the hearing range.

4. For persons with purely perceptive impairment or with mixed conductive and perceptive impairment it is generally desirable to provide more amplification for the frequencies for which the hearing losses are large than for those for which the hearing losses are small. However, it is a serious mistake to prescribe an amplification equal to the hearing loss at each frequency. The work of many investigators has shown that for persons with perceptive impairment the hearing loss for tones of normal intensity is considerably less than the hearing loss for tones of threshold intensity. This is especially true for tones of high frequency, which are the ones most involved in cochlear or nerve lesions.

A patient who has been thoroughly studied by N. A. Watson, L. Sepmeyer and ourselves has an air conduction loss of 50 decibels at 128 cycles, gradually increasing to a loss of 90 decibels at 4,096 cycles, with complete loss of usable hearing for frequencies above 6,000 cycles. With no hearing aid and with a man calling words to him in a normal conversational voice from a distance of 2 feet, he was able to hear correctly 78 per cent of the vowels and 23 per cent of the consonants, which corresponds to a standard syllable articulation of only 4 per cent. With a woman calling the words he could hear correctly only 36 per cent of the vowels and 15 per cent of the consonants, which gives the negligible syllable articulation of only 0.4 per cent. With his portable aid (carbon microphone, carbon booster and electromagnetic receiver) he could hear correctly 76 per cent of the vowels and 54 per cent of the consonants, giving a standard syllable articulation of 21 per cent. With a portable vacuum tube aid he could hear correctly 100 per cent of the vowels and 70 per cent of the consonants, giving a standard syllable articulation of 45 per cent. With high quality vacuum tube amplification (a laboratory instrument, not portable) with equal amplification for all frequencies and with the optimal amount (42 decibels above threshold) of amplification, he could hear 100 per cent of the vowels and 80 per cent of the consonants, giving a standard syllable articulation of 60 per cent. When this uniform amplification was modified in such a way that the higher frequencies were given an amplification of 30 decibels more than the amplification provided for the low frequencies, he heard correctly 100 per cent of the vowels and 87 per cent of the consonants, giving a syllable articulation of 72 per cent. These results show



in a convincing manner (1) the advantage of high quality amplification and (2) the added advantage of the appropriate type of selective amplification.

These results are for one person, but they are based on an extensive series of tests, in which a total of 30,450 test syllables were employed. They are therefore reliable and accurate so far as this one person is concerned. Less exhaustive but similar tests on several other persons confirmed the conclusions drawn as to high quality and selective amplification.

It is our belief that these and similar observations open a new era for the hard of hearing, and recent trends in the development of vacuum tube aids in Great Britain as well as in this country indicate that a number of hearing aid concerns are aware of this approaching era.

It is true that the carbon or telephone type of aid has been developed to such a high degree that it has provided useful hearing for millions of hard of hearing persons who otherwise would understand speech only by lip reading or some form of sign language. Although such aids are often acceptable for intimate conversation, they fall far short of the necessary requirements for the satisfactory reception of speech in large rooms or for the distortionless amplification of music under almost any condition. The shortcomings of the carbon aid are particularly acute for those with advanced cochlear or nerve impairments. Often this type of instrument will overemphasize the background noise and reverberation to the extent that the nerve-deafened person will prefer not to hear rather than to suffer the loud and raucous noise produced by the instrument.

Even the most highly improved carbon type of hearing aid is subject to unavoidable distortions, inherent in the process by which it amplifies. The carbon type of instrument is capable of amplifying only a limited range of frequencies, about 300 to 3,000 cycles, and even for this restricted range there are undesirable "nonlinear" distortions. The first limitation means that those frequency components of speech and music which lie outside the restricted range, that is, below 300 cycles and above 3,000 cycles, are completely missing from the sound which has been amplified; the amplification is not uniform even throughout the limited range of frequencies for which the instrument does amplify, owing to the resonant action of diaphragms in the instrument. Nonlinear distortion means that the amount of sound which the instrument delivers to the ear is not proportional to the amount which strikes the microphone, and any instrument which responds in this manner introduces spurious frequencies in the amplified sound which did not exist in the original sound.

Vacuum tube amplification, the type used in the modern radio, is free from both frequency and nonlinear distortion; that is, it is capable of amplifying uniformly the entire range of frequencies which comprise speech and music, and it introduces no spurious frequencies. When a high quality microphone and a high quality earphone are used with a vacuum tube amplifier, the sound which reaches the ear is an amplified "facsimile" of the original sound. There are other meritorious features of vacuum tube hearing aids which every hard of hearing person should know: 1. Any required degree of amplification can be attained—sufficient for good hearing by bone conduction as well as air conduction—simply by using more vacuum

tubes, and this is accomplished without sacrificing the quality of the amplified sound. 2. The amplification remains constant day in and day out over a long range of the life of the batteries and is uniformly good for all positions of the hearing aid. 3. The adventitious or background noise is very low, and consequently the aid is free from the hissing sound so characteristic of the carbon type aids. 4. Since the amplification is uniform for all frequencies (that is, there are no "peak" responses for certain resonant frequencies), it is not necessary to adjust the loudness of the instrument to as high a level as is required for the carbon aid, in which it is necessary to adjust the loudness to a very high level in order that certain frequencies, which are not amplified so much as the resonant frequencies, will be heard with adequate loudness. 5. By means of appropriate electrical filters in vacuum tube aids it is possible to amplify selectively the low, medium or high frequencies and thus provide the type of amplification best suited for each individual.

Much has been said and written respecting selective amplification and the prescribing of hearing aids; perhaps too much has been claimed by certain proponents of these new developments. For many persons uniform amplification without distortion will be as good as, or better than, any other kind of amplification, but for other persons, especially those who have nearly normal hearing for low frequencies and a marked impairment for high frequencies, we have found that selective amplification is of distinct advantage. Criteria are already developed, based on audiometric tests, whereby it is possible to prescribe the best type of hearing aid for each patient with impaired hearing.

For those who want the best in hearing and are willing to make a slight sacrifice in portability, the vacuum tube type of hearing aid should be recommended. Also those who can afford to buy two instruments will find that the vacuum tube instrument will perform unusually well in many situations, such as in the office, at the bridge table or at musicals, where the more portable carbon aid will not be so satisfactory. Finally, many hard of hearing persons, especially those with a marked nerve or perceptive impairment, will find the vacuum tube aid so much better than the carbon aid that they should use it exclusively.

With the familiar carbon type of aid there was very little the physician could do for hard of hearing patients except advise those who needed an aid to try out several of the leading instruments on the market. Even if he knew how to write the prescription for the best kind and degree of amplification required for each patient, he realized that it would not be possible to fulfill these requirements by any possible combination of microphone, carbon amplifier and ear piece which make up the assembly of the carbon type hearing aid. With the advent of high quality aids of the vacuum tube type, however, audiometry and the prescribing of hearing aids takes on a new significance and the otolaryngologist is able to perform an indispensable service to his patients.

To recapitulate, these are the practical benefits of this service:

1. The otolaryngologist can measure the exact amount of hearing that each patient has both by air conduction and by bone conduction. This is a prime requisite for an intelligent approach to the hearing problem presented by every patient.

2. He can diagnose impaired hearing and determine how much of the impairment is of a conductive or purely mechanical type and how much of a cochlear, or perceptive, type.

3. He can determine whether any hearing aid should be recommended. Although there will be some exceptions, the following will serve as a working rule: All patients who have a loss in excess of 25 decibels (35 decibels at 4,096 cycles) throughout the range of 256 to 4,096 cycles should have a hearing aid.

(a) If the loss does not greatly exceed these limits, and especially if the loss is largely conductive, it is probable that the carbon type of aid should be recommended, because of its greater convenience and lower cost.

(b) If the loss is much greater than these limits, that is, if it is greater than 50 decibels throughout the range of 256 to 4,096 cycles, and especially if it is largely of the cochlear, or perceptive, type, a high quality vacuum tube aid should be prescribed.

(c) If the impairment is primarily conductive, a bone conduction type of receiver is indicated; if it is primarily perceptive, an air conduction type. If conductive and perceptive impairments are approximately equal, choice should be based on thorough test of both types.

(d) If the loss of hearing is largely perceptive and is much greater at high frequencies than at low ones, a high quality vacuum tube type with appropriate emphasis of the high frequencies is indicated.

4. If a definite choice of instrument is not indicated by the audiometric tests, recourse should be made to careful speech articulation tests.

As the science and art of audiometry progress, more specific criteria and procedures than those here presented will become established; but even now the otolaryngologist can and should take over the use of audiometry in serving his hard of hearing patients. If he does not, others will.

1930 Wilshire Boulevard.

#### ABSTRACT OF DISCUSSION

ON PAPERS OF DR. HAYDEN AND DRS. JONES  
AND KNUDSEN

DR. WILLIAM P. WHERRY, Omaha: Otology has been content to disregard the criticism of courts of law as well as of contemporary medicine, who have asked that methods be created whereby deafness can be allocated into ratios and percentages; that a record and a system be devised whereby a visual interpretation can be made by others than the person making the tests. Furthermore, that hearing aids for the deafened be prescribed by measurement, much as glasses are now, rather than by a trial and error method. Otology, therefore, must awaken from its lethargic poise and seriously consider ways and means to satisfy the demands now before it. Tuning fork tests primarily differentiate conductive from nerve deafness, which conclusion is of little interest to industry or courts of law. Likewise voice tests, with or without a poise apparatus as an adjunct, may be classified in the same way. "The potential variables among examiners makes accuracy of parallel recording almost impossible. The present day audiometers may be inaccurate; nevertheless, these instruments are tangible proofs that efforts are being made to develop a precision control. Within the past year a continuous frequency audiometer has been developed which can be produced on a low cost basis and which seemingly is giving a satisfactory return on both air and bone conduction. An audiometer built for clinical medicine may not be usable for research purposes; however, from the point of view of universal acceptance audiometer production must be approached from a low cost level even if specific instruments are to be built separately for research activities. The theme

developed in the papers for which this discussion has been prepared is timely. The art of medicine is as essential to good medicine as is the science of medicine; neither can be divorced from the other in clinical practice. Applying this commitment to the management of deafness, it should follow that examination records should be plainly interpretative and the facts visibly available to any one rechecking them. Only through some such program can otology hold a place in sound contemporary medicine. It must be granted that audiograms are a move toward the final objective, which objective has not been realized through tuning forks and voice tests. The ultimate objective will be in the offing when (1) audiometers are built simply and accurately for clinical use and (2) production is large enough to create a low cost level. I cannot close without saying a word of praise for the Council on Physical Therapy of the American Medical Association, which, through a sincere effort, has forced the issue of deafness evaluation on those who practice otology.

DR. HORACE NEWHART, Minneapolis: Audiometry has made possible extensive research which recently has yielded important basic knowledge concerning some of the unproved but suspected causes of impaired hearing and has made possible greatly improved means for making adjustments and providing compensating hearing devices for handicapping loss of hearing. It has opened to the medical profession the possibility of vast attainment in a neglected field of preventive medicine. Already the public school health program in many communities has been expanded to include the routine testing of the hearing of school children by scientifically accurate methods. This means the use of the audiometer. Several states have passed laws effectively providing for this procedure. The benefit which will follow its general adoption is incalculable. This procedure, to insure its satisfactory application, should be under the general supervision of interested qualified physicians and not be left to laymen, nurses and technicians. The situation demands the leadership of public-minded medical practitioners, especially otologists. The chief obstacle to the general use of audiometers in school health work has been the matter of expense. It should be made known that recently the cost of equipment has been materially reduced and the methods of application simplified, insuring greater accuracy and economy of time. Recently there has been made available at a low price a new, pure tone audiometer especially designed for use in schools. It is well constructed, is accurate in its performance and makes possible the testing of from thirty to sixty pupils per hour at fixed intervals of one octave from 128 to 8,192 double vibrations per second. It provides the means for detecting and measuring hearing acuity only by air conduction, thereby precluding its use for diagnosis or prescribing hearing devices. The temptation of the school nurse or technician to make a diagnosis is thus avoided. This type of audiometer will find extensive use in public schools, in college and university health services and in industrial medicine. In connection with the presentation of these instructive papers, attention should be directed to improvements recently made in hearing aids of the vacuum tube type. These have been so reduced in bulk and weight that they are now wearable like devices of the carbon microphone type. Since they afford much greater amplification than the latter, are remarkably free from distortion and intolerable internal noises and have a greater frequency range, they are especially adapted to the needs of those severely deafened persons who cannot be fitted by the carbon microphone hearing devices.

DR. HAROLD A. FLETCHER, San Francisco: The authors have spoken on the standardization of the audiometer. I have come more and more to use the audiometer. It is expensive and it makes the average otologist stop and think before he purchases one. I hope that the Council on Physical Therapy of the American Medical Association will soon publish a list of accepted audiometers. More otologists will buy audiometers when they are assured that they are getting an accurate instrument of precision. Drs. Jones and Knudsen mentioned the fact that otologists still must use all means of diagnosis, examination of the patient, the history and the general investigation. The use of tuning forks is still helpful. I think otologists go too far with diagnosis many times from the audiometer itself. It gives a picture of the air conduction loss in a patient with a comparative value of what tones, upper, middle or lower, are lost,

and the relative picture between them. It gives a fair idea of the bone conduction loss and it gives a basis of comparison of bone conduction loss and air conduction loss that is tolerably accurate. But we often forget the underlying pathology in the use of the audiometer and jump at conclusions from the mere curve. We should be cautious in advising the patient without taking into consideration the whole picture. I don't agree with Drs. Jones and Knudsen that one "can see an ear hear" with the electric otoscopic oscillator. The use of the oscillator is definitely helpful, but I know that when one exaggerates the movements to the drum so that they can be seen, one is not "seeing the ear hear"; one is seeing the drum membrane move under very abnormal conditions. Many times an important lesion of the ossicular chain aside from fixation of the stapes may be present and not show in the movement with the oscillator. I do not agree with Drs. Jones and Knudsen that one can make a diagnosis of otosclerosis in the case of a child at birth or at 5 years of age. Otosclerosis occurs in children younger than it was once thought, but I feel that it is impossible to make a diagnosis of otosclerosis with tests at that age. With the exception of those cases in which there is an indication to examine the vestibular apparatus, the vestibular examination has but little part in relation to the examination with the audiometer.

MR. HOWARD A. CARTER, Chicago: The Council on Physical Therapy of the American Medical Association, of which I am secretary, desires to recommend reliable and efficient apparatus for professional service. To aid the deafened, the Council is particularly interested in having on the accepted list efficient audiometers and hearing aids. A program for investigating the feasibility of fitting hearing aids by means of audiograms has been suggested in a paper by Dr. Austin Hayden. He proposes that audiograms taken by otologists in their own offices be referred to manufacturers or their representatives and from these data hearing aids will be made up according to prescription. After the hearing aid is delivered it is checked by suitable means to insure the best possible fitting. A thousand or more fittings, properly tabulated, will go far in establishing the advisability of selecting hearing aids by audiometric examination. An investigative program of this nature is indeed a step forward, and I hope that otologists will get behind the movement, thus enabling evidence of a critical nature to be accumulated as quickly as possible. As I understand it, this program is not confined to any one particular make of hearing aid but several manufacturers have been invited to participate. If the otologists do not take an active interest in fitting hearing aids, this important service will be taken over by other groups.

DR. DAVID HIGBEE, San Diego, Calif.: I realize this is a discussion about audiometry, but as Drs. Jones and Knudsen mentioned a few things that are off that subject I feel at liberty to make some statements about the diagnosis of fixed stapes. Drs. Jones and Knudsen stated that they require an oscillator to determine that the stapes is fixed or movable. Of course, that means that the membrana tympani must be intact or the oscillator would not alter its position. If a person shows a normal drum membrane and has normal bone conduction and a negative Rinne test, it certainly must indicate that the stapes is fixed. Bone conduction cannot be relied on as a certain guide to knowledge of the perception apparatus. Sometimes patients with perceptive deafness are seen who are Rinne negative. Guild has shown the pathologic condition which accounts for this phenomenon.

DR. ISAAC H. JONES, Los Angeles: Dr. Higbee and Dr. Fletcher feel that it is possible to "make a diagnosis without so much apparatus." At our recent state meeting, Dr. George Hosford showed us pictures of his office equipment in order to give his concept of a thorough study of the eye; we were all impressed with the enormous amount of apparatus. We know that many of our ophthalmologic friends spend many thousands of dollars for apparatus in order to do the best work possible; so is it not advisable for us to spend a few hundred dollars for a turning chair, an oscillator and an audiometer in a sound-proof booth in order that we also may do the best work possible? To be sure, the oscillator with the electric otoscope cannot enable one to "see the cochlea hear"; but it does enable the otologist to make a careful study

of the mobility of the drum membrane and the hammer handle. It does not give direct information regarding the joint of the malleus and incus, but an arthritis of that joint would probably not permit normal mobility of the hammer. For the past twenty years we have seen several cases in which we made a clinical diagnosis of arthritis of ossicular joints, although we have no histologic evidence. With a smile, we have always said that when so many thousands of people are killed by automobiles, isn't it strange that not one of these cases has come to autopsy? However, we have no doubt that arthritis of the ossicles does occur and we suggest that all might bear this in mind in studies of lesions of the conductive mechanism. In brief, we believe in precision measurements of the ear and consider that every possible means should be used to secure the fullest information about our patients.

## EXPERIMENTAL POLIOMYELITIS BY THE TONSILLOPHARYNGEAL ROUTE

WITH SPECIAL REFERENCE TO THE INFLUENCE  
OF TONSILLECTOMY ON THE DEVELOPMENT  
OF BULBAR POLIOMYELITIS

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NEW YORK

The purpose of this communication is to present evidence (1) that the tonsillopharyngeal region is more highly sensitive to injections of poliomyelitis virus than are certain other regions of the body (e. g. the abdominal cutaneous or subcutaneous tissues) and (2) that the disease which results from infection by the tonsillopharyngeal route is, with few exceptions, bulbar or bulbospinal in type and different in its clinical course from that which follows nasal instillation of the virus. The present investigation was prompted by several clinical reports of cases of bulbar poliomyelitis following within a relatively short time operations of tonsillectomy and adenoidectomy. Ayer<sup>1</sup> (1928) appears to be the first to have noted the development of bulbar poliomyelitis in nine individuals within five to ten days after tonsillectomy. In 1929 Aycock and Luther<sup>2</sup> reported that, of thirty-six cases of poliomyelitis with a history of tonsillectomy within one year, the disease had developed in sixteen (eleven of which were of the bulbar form) from seven to eighteen days after operation, while there were no cases under seven days and none from the eighteenth to the thirtieth day. Silverman<sup>3</sup> observed five cases, in four of which there was palatal paralysis and in one weakness of the neck muscles, which occurred from nine to nineteen days after operation. In the 1935 outbreak in New York City, Fischer and Stillerman<sup>4</sup> found ten patients (among 686 cases) who had their tonsils and adenoids removed within a month of the onset of poliomyelitis. In eight of these ten the disease developed between the tenth and twelfth days after operation and in the other two on the sixteenth and twenty-second days; six of the ten patients had the bulbar or encephalitic form of the disease. During a small outbreak in 1937 Stillerman and

From the Laboratories of the Rockefeller Institute for Medical Research.

1. Ayer, W. D.: Poliomyelitis, Proc. Internat. Assembly of the Interstate Post-Graduate Medical Assn. of North America, 1928, p. 319.

2. Aycock, W. L., and Luther, E. H.: Occurrence of Poliomyelitis Following Tonsillectomy, New England J. Med. 200: 164 (Jan. 24) 1929.

3. Silverman, A. C.: Acute Poliomyelitis in Syracuse, New York: Clinical Analysis of Five Successive Outbreaks from 1922 to 1929, with Special Reference to Epidemiology and Treatment with Serum, Am. J. Dis. Child. 41: 829 (April) 1931.

4. Fischer, A. E., and Stillerman, Maxwell: Acute Anterior Poliomyelitis in New York in 1935: A Review of 686 Cases, Am. J. Dis. Child. 54: 984 (Nov.) 1937.

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Fischer<sup>5</sup> found three cases in which there was a history of tonsillectomy during the month preceding the illness among fifty-two poliomyelitis patients; all three had the bulbar form of the disease and the interval between operation and onset was fourteen days in two and twenty-one days in the third. While a large number of children are ordinarily submitted to tonsillectomy and adenoidectomy during the summer months and the occurrence of poliomyelitis among some of them may perhaps not be unexpected, it is the relatively high incidence of bulbar involvement among them that leads one to suspect that these operations may perhaps not only have favored the development of poliomyelitis but also influenced the special localization of the disease.

Experimentally there has been very little work done heretofore on the tonsils or pharynx as a route of poliomyelitis virus infection. In 1911 Landsteiner,<sup>6</sup> Levaditi and Danulesco<sup>7</sup> reported that submucous injection into the tonsillar area of a monkey resulted in poliomyelitis. Levaditi and Danulesco<sup>7</sup> showed that painting or rubbing the tonsils of three monkeys with virus failed to induce the disease, while application of the same virus to the nasal mucosa was followed by typical poliomyelitis. It is a common observation that, when virus is instilled intranasally in the amounts ordinarily used in rhesus monkeys, most of it runs down into the pharynx and mouth. The almost regular failure of the disease to develop following nasal instillation in monkeys whose olfactory pathways had been interrupted<sup>8</sup> suggests therefore that contamination of the intact structures of the pharynx and mouth does not supply a suitable site for the entry of the virus.

It appeared desirable, therefore, to investigate (1) whether the presence of an open wound such as would follow a tonsillectomy operation might open a new portal of entry for the virus and (2) to determine the ease with which poliomyelitis could be induced by injecting the virus into the tonsillopharyngeal region and whether or not the disease so produced would be different from that which follows other modes of inoculation. It was clear from the beginning that, working with virus in the pharynx and mouth, it would be very easy to contaminate the nasal mucosa and that, unless some method of barring the olfactory pathway as a portal of entry for the virus was employed, the results might be confusing or difficult to interpret. Since the 1 per cent zinc sulfate nasal spray has proved effective in our hands,<sup>9</sup> as in those of Schultz and Gebhardt,<sup>10</sup> in preventing poliomyelitis in almost all monkeys receiving virus by nasal instillation, this method was chosen to close the olfactory pathway while studying the effect of tonsillectomy as a possible means of opening a new portal of entry for the virus. Histologic examination

of the olfactory bulbs<sup>11</sup> of monkeys succumbing to the disease provided another means for ascertaining whether or not the virus had reached the central nervous system by a pathway other than the olfactory.

*Do Tonsillectomy Wounds Open a Portal of Entry for Virus Administered by Spraying, Swabbing or Nasal Instillation?*—Two series of experiments were conducted in an attempt to obtain an answer to this question. In the first series four *Macacus rhesus* monkeys were given a nasal spray of 1 per cent zinc sulfate ( $\text{ZnSO}_4 \cdot \text{H}_2\text{O}$ ), thirty bulb compressions from a De Vilbiss atomizer for each nostril, once a day for two days. Two days after the last spray the palatine tonsils were removed by dissection under ether anesthesia. (It may be stated here that the tissue removed had the same histologic structure as the human palatine tonsil, although for the purpose of these experiments the presence of the operative wound was the essential factor.) Within one hour of the operation 1 cc. of 5 per cent virus suspension was instilled into each nostril (virus entered throat and mouth) and the same dose was repeated four hours later. Employing pooled M. V. virus, glycerolated for not longer than one month, this procedure has led to the development of poliomyelitis in practically all control monkeys (over 100) in the past two years;<sup>12</sup> three control animals given the same virus suspension developed poliomyelitis. Two of the zinc sulfate-treated and tonsillectomized monkeys received additional amounts of virus—3 cc. sprayed onto the wounds at each nasal instillation. None of the four treated animals, however, developed poliomyelitis and daily temperatures for a month revealed no fever.

In the second series four monkeys received the same zinc sulfate nasal spray as in the preceding experiment. The operation was performed twenty-four hours after the last spraying and differed from the preceding one in that the operative field was flooded with virus in order that the instruments might grasp and cut through contaminated tissue. After the removal of each tonsil and the cessation of bleeding, thick virus-containing tissue (sediment from 5 per cent virus suspension) was swabbed into the wound. Before the monkey recovered from the anesthesia, 3 cc. of 5 per cent virus suspension was sprayed into the throat. On the afternoon of the same day, and twice a day during the following two days, each monkey was again sprayed with 4 cc. of virus. None of these four animals exhibited any signs of disease; in two control monkeys receiving the usual nasal instillation with this virus suspension poliomyelitis developed.

That the monkeys used in these two experiments were not resistant animals to begin with and had acquired no immunity as a result of the repeated virus sprays is evident from the fact that they succumbed with typical poliomyelitis following nasal instillation of the virus after the effect of the zinc sulfate had disappeared.<sup>13</sup> It seemed, therefore, that in monkeys the wounds created in the oropharynx by tonsillectomy failed to establish a portal of entry for poliomyelitis virus (M. V. strain) applied by swabbing, spraying or nasal instillation when the olfactory pathways were blocked by zinc sulfate nasal sprays prior to operation.

5. Stillerman, M., and Fischer, A. E.: Acute Bulbar Poliomyelitis Following Recent Tonsillectomy and Adenoidectomy, to be published. Personal communication to the author.

6. Landsteiner, K., Levaditi, C., and Danulesco, V.: Presence du virus de la poliomyélite dans l'amygdale de singes paralysés et son élimination par le mucus nasal, *Compt. rend. Soc. de biol.* 71: 558, 1911.

7. Levaditi, C., and Danulesco, V.: Conditions qui président à la transmission de la poliomyélite, *Compt. rend. Soc. de biol.* 72: 606, 1912.

8. Brodie, M., and Elvidge, A. R.: The Portal of Entry and Transmission of the Virus of Poliomyelitis, *Science* 79: 235 (March 9) 1934.

9. Schultz, E. W., and Gebhardt, L. P.: Olfactory Tract and Poliomyelitis, *Proc. Soc. Exper. Biol. & Med.* 31: 728 (March) 1934. Lennette, E. H., and Hudson, N. P.: Relation of Olfactory Tracts to Intravenous Route of Infection in Experimental Poliomyelitis, *ibid.* 32: 1444 (June) 1935.

10. Howe, H. A., and Ecke, R. S.: Experimental Poliomyelitis Without Paralysis, *ibid.* 37: 125 (Oct.) 1937.

11. Olitsky, P. K., and Sabin, A. B.: Comparative Effectiveness of Various Chemical Sprays in Protecting Monkeys Against Nasally Instilled Poliomyelitis Virus, *Proc. Soc. Exper. Biol. & Med.* 36: 532 (May) 1937.

12. Sabin, A. B., and Olitsky, P. K.: Zinc Sulfate as a Chemoprophylactic Agent in Poliomyelitis, *Proc. Soc. Exper. Biol. & Med.* 35: 524 (Jan. & Feb.) 1938.

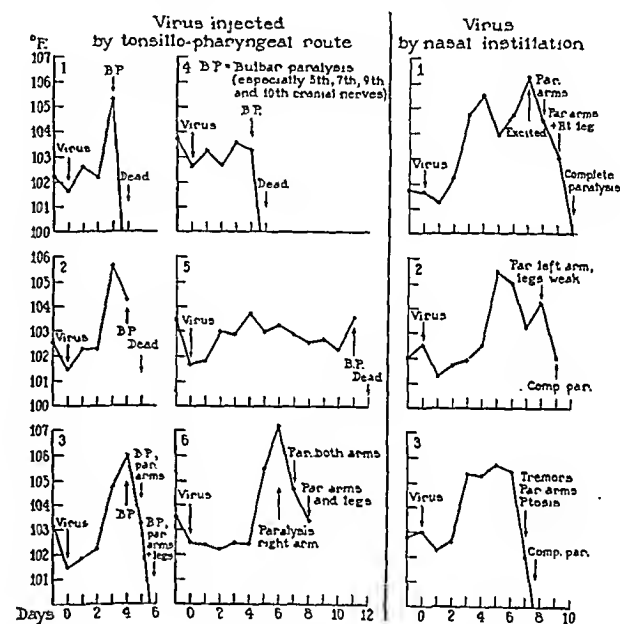
13. Sabin, A. B., and Olitsky, P. K.: Mode of Action of Zinc Sulfate Spray in Preventing Infection with Nasally Instilled Poliomyelitis Virus, *J. Bact.* 35: 44 (Jan.) 1938.

*Does the Deposition of Virus Within the Tissues of the Tonsillopharyngeal Region (as by Injection) Lead to the Development of Poliomyelitis?*—The preceding experiments emphasized again that in the monkey the olfactory mucosa is the only known peripheral tissue which by mere transitory<sup>12</sup> contact of its surface with the virus of poliomyelitis can permit it to invade the central nervous system. When relatively large amounts of virus are deposited within certain tissues, as by subcutaneous or intracutaneous injection, the disease may be induced in a varying, though usually small, number of monkeys. The chief purpose of subsequent experiments was to determine (a) whether injection into the tonsillopharyngeal region of amounts of virus usually employed for nasal instillation would give rise to poliomyelitis with any degree of frequency, (b) whether the disease so induced would be different from that following nasal instillation of virus, and (c) how inoculation by the tonsillopharyngeal route compared with injections of identical amounts of the same virus by the subcutaneous and intracutaneous routes.

In the first experiment of this series six monkeys received zinc sulfate nasal sprays as described before. Three days after the last spray the virus was administered to three monkeys by nasal instillation (1 cc. of 5 per cent suspension in each nostril on two occasions) and to the other three by injection of 1 cc. of the 10 per cent suspension into each tonsillar region. The latter inoculation was usually performed by grasping the anterior pillar of the fauces to evert the palatine tonsil, into which the needle was inserted, infiltrating the tonsil and surrounding tissues as the needle was being thrust deeply as far as the bone. Three normal monkeys which received virus intranasally for control developed poliomyelitis. Of the zinc sulfate treated animals those receiving virus by nasal instillation remained well, while poliomyelitis developed in two of the three in which virus was inoculated into the tonsillopharyngeal region; one of these two had the distinct bulbar form including aphonia and paralysis of the face and of the muscles of mastication, while in the other the first sign was head drop, which was quickly followed by flaccid paralysis of the upper extremities. In the following experiment poliomyelitis developed in four of six zinc sulfate treated monkeys inoculated with 1 cc. of 10 per cent virus suspension into each tonsillar region, three of these being of the bulbar type; six zinc sulfate treated monkeys which were given the same amounts of the same virus suspension subcutaneously in the right and left lower abdominal quadrants remained well. In the next series the same amount of virus was injected intracutaneously (in ten pictures on the abdominal skin) and into the tonsillopharyngeal region of normal monkeys, i. e. without any preliminary chemical spraying of the nasal mucosa; the six monkeys injected intracutaneously remained entirely well, while poliomyelitis developed in all six of the tonsillopharyngeal group, five of them having the typical bulbar disease. In the same experiment there were five monkeys which, having had zinc sulfate nasal sprays from one to three months before and having resisted virus by nasal instillation or pharyngeal spray, were inoculated with 1 cc. of 10 per cent virus suspension in each tonsillar region; poliomyelitis developed in four of these five, all of the bulbar type. In one of the experiments it was found that, when 0.2 cc. (instead of 1 cc.) of the virus suspension was injected superficially into the tonsillar area of six monkeys, all remained well. In another group of six

monkeys which received 0.2 cc. into each tonsillar area, tonsillectomy was performed immediately after injection to determine whether the trauma and cutting through the virus-containing tissue would facilitate the development of poliomyelitis; all of these remained well. In a similar group of three, however, in which the tonsillectomy was followed by swabbing of the wounds with virus tissue and subsequent sprays of 10 per cent virus suspension into the throat, one animal acquired typical bulbar poliomyelitis (including aphonia, impaired deglutition and salivation) on the fourth and died on the fifth day. One cannot tell here whether any of the special procedures were responsible or whether in an occasional monkey even 0.2 cc. of virus may produce the disease, in spite of the fact that most of it was almost immediately removed during the tonsillectomy.

Altogether there were twenty monkeys which received injections of 1 cc. of 10 per cent virus suspension into



Clinical course of experimental poliomyelitis in monkeys.

each tonsillar region; poliomyelitis developed in sixteen of these (80 per cent) and among them there were thirteen cases of the bulbar type. None of the twelve monkeys which received injections of the same amounts of virus intracutaneously or subcutaneously (abdominal region) exhibited any signs of disease. It is, of course, known that an occasional monkey receiving subcutaneous injections of this strain of the virus (particularly with large amounts) acquires poliomyelitis, but the simultaneous tests in the present study show rather conclusively how very much more susceptible is the tonsillopharyngeal region. It has been stated<sup>14</sup> that there are certain strains of the virus which, early after their isolation from human beings, are somewhat more infective by the intracutaneous route than is the M. V. strain which was used in these experiments, and it is quite possible that they might be more highly infective also by the tonsillopharyngeal route.

*Clinical Course of Disease Following Nasal Instillation Compared with That Induced by Tonsillopharyngeal Injection of the Virus.*—A most striking and practically constant manifestation of the disease induced

14. Trask, J. D., and Paul, J. R.: The Skin Infectivity of Poliomyelitis Virus, *Science* 57: 44 (Jan. 14) 1938.

by nasal instillation of the virus is that the first rise in temperature occurs at least three to five days before the first appearance of nervous signs. The temperature then either remains elevated or drops considerably (sometimes practically to normal) within a day or two and usually rises again before the onset of paralysis (dromedary curve). After injection of the virus into the tonsillopharyngeal region, however, the course of events is quite different: among seventeen such monkeys in which poliomyelitis developed there were four in which no rise in temperature was observed, six in which fever and paralysis appeared on the same day, and seven in which the rise of temperature preceded paralysis by

TABLE 1.—Order in Which Structures Were Affected After Nasal Instillation of Virus

Upper extremities first.....	103	(31.2%)
Lower extremities first.....	13	(5.2%)
Upper and lower extremities practically simultaneously.....	118	(41.2%)
Facial paralysis first.....	7	(2.8%)
Ptosis first.....	7	(2.8%)
Respiratory failure (bulbar?).....	2	(0.8%)
Total.....	250	monkeys

one day. Again following nasal instillation, paralysis practically never appears before the sixth day, and usually not before the seventh or eighth day, while after inoculation into the tonsillar region it appeared on the third day in one monkey, on the fourth day in six, on the fifth day in three, on the sixth day in four, and one each on the seventh, eighth and eleventh days. Furthermore there was a distinct difference in the structures which became paralyzed after the two routes of infection. In the past two to three years I have observed more than 250 monkeys in which poliomyelitis developed after nasal instillation of the virus, and table 1 presents an analysis of the incidence with which the various structures were affected first.

It will be noted that following nasal instillation the disease begins with cranial nerve palsy (chiefly third and seventh cranial nerves) in only about 6 per cent of the cases. The complete bulbar picture with aphonia, impaired deglutition, salivation or paralysis of the muscles of mastication was not observed even once, although two monkeys died apparently of respiratory failure or at least without the appearance of any observable paralysis and with histologic changes predominantly at levels above the spinal cord. After tonsillopharyngeal injection of the virus the picture was quite different (table 2).

To illustrate the sequence of events in monkeys receiving virus by injection into the tonsillar region, several protocols will be abstracted:

**MONKEY 1.**—The temperature was normal (from 101.8 to 102.7 F.) and the animal appeared entirely well for two days after injection. On the morning of the third day the temperature was 105.1; there were weakness of the facial muscles and the muscles of mastication, salivation, and a peculiar cry; the head was erect and the extremities were strong. In the afternoon of the same day the temperature was 105.2; there were complete aphonia with obstructed respiration, impaired deglutition, salivation, complete bilateral facial paralysis and complete paralysis of the muscles of mastication; the sensory fifth nerve, the eyes and the tongue were normal; there was head drop to the left. The upper and lower extremities were strong. On the fourth day at 9 a. m. the monkey was prostrate with a temperature of 98 and labored respiration; it died one hour later.

**MONKEY 2.**—The temperature was normal (from 102 to 103.5 F.) and the animal was well for the first two days. On the third day it was 107 in the forenoon and 106.2 in the afternoon

but there were no detectable nervous signs. On the fourth day the temperature was 104.7 and there were incomplete aphonia, paralysis of the muscles of mastication, partial head drop and complete paralysis of the right arm; involvement of the facial muscles and deglutition were questionable. On the fifth day the temperature was 99; there were complete aphonia and inability to swallow liquids or solids, and paralysis of the muscles of mastication. The facial muscles were weak, the tongue was normal and there were complete head drop and flaccid paralysis of the upper and lower extremities. The monkey was killed at this stage for study of its nervous system.

**MONKEY 3.**—The temperature was normal (from 101.7 to 103.3 F.) for the first five days. On the sixth day it was 106.3 and there were complete right facial paralysis and no other nervous signs. On the seventh day the temperature was 103.5 and there were right facial paralysis, aphonia, head drop, and paralysis of all extremities; the muscles of mastication were normal, and deglutition and tongue movement were questionable; this monkey was killed in the afternoon of the same day (the temperature then was 101.5 F.) for study of the nervous system.

**MONKEY 4.**—The temperature was normal (from 102.2 to 102.5 F.) for the first four days and the temperature was 105.5 but the monkey was otherwise well on the fifth day. On the sixth day the temperature was 107.3; there was paralysis of the right arm but no other nervous signs. On the seventh day the temperature was 104.8; both arms were paralyzed. On the eighth day the temperature was 103.4; there was paralysis of the arms and legs but no other involvement. The animal was killed.

**MONKEY 5.**—The temperature was normal (from 102.7 to 103.5 F.) and the animal was well for the first three days. On the morning of the fourth day the temperature was 103.2 and there were salivation, incomplete aphonia, paralysis of the muscles of mastication and complete right facial paralysis, deglutition was questionably impaired, the tongue was normal, there was head drop to the right with inability to raise the left arm above 180 degrees, and the lower extremities were uninvolved and strong. In the afternoon of the same day the temperature was 101.1, the aphonia and head drop had become complete, the facial paralysis was bilateral and there were distinct nystagmus and partial paralysis of both arms, the legs still being strong. The animal was found dead on the morning of the fifth day.

TABLE 2.—Order in Which Structures Were Affected After Tonsillopharyngeal Injection of Virus

Bulbar paralysis first (i. e., aphonia, impaired deglutition, paralysis of muscles of mastication, with or without facial, head drop or other paralyses).....	13	(76.5%)
Head drop or paralysis of upper extremities or both, first (these never showed bulbar signs).....	3	(17.6%)
Facial paralysis first.....	1	(5.9%)
Lower extremities first.....	0	
Total.....	17	monkeys

**MONKEY 6.**—The temperature was normal (from 101.7 to 103.7 F.) and the monkey was well for ten days after injection. On the eleventh day the temperature was 103.6 and there were incomplete aphonia with difficult respiration, salivation with inability to swallow solids or liquids, bilateral facial paralysis and paralysis of the muscles of mastication, the tongue was normal, and there was head drop with complete paralysis of the right arm and inability to raise the left one above 180 degrees. The legs were uninvolved and strong. The monkey was found dead on the morning of the twelfth day.

The difference in the clinical picture of the disease induced by nasal instillation and by tonsillopharyngeal injection of the virus is exactly what one would expect on the basis of the probable progression of the virus from each site. Faber and Gebhardt<sup>15</sup> have already

<sup>15</sup> Faber, H. K., and Gebhardt, L. P.: Localizations of the Virus of Poliomyelitis in the Central Nervous System During the Preparalytic Period, After Intranasal Instillation, J. Exper. Med. 57: 933 (June) 1933.

shown by subinoculation experiments that nasally instilled virus involves progressively the olfactory bulbs, hypothalamus, thalamus and other higher centers before it reaches the spinal cord and gives rise to paralytic signs. In as yet unpublished studies I have observed neuronal lesions progressively in the olfactory bulbs, the region of the anterior perforated space, hypothalamus, thalamus and midbrain (especially substantia nigra) of such monkeys, and it is more than probable that the three to five day period of fever preceding the onset of paralysis is a reflection of the progressive involvement of at least some of these higher centers. After tonsillopharyngeal injection, however, the clinical picture indicates that in most if not all of the monkeys the virus that enters along the nerves supplying the region comes into immediate contact with the cranial nerve nuclei, the involvement of which leads to the typical bulbar form of the disease. Histologic studies have not yet been completed, but it is already evident that extensive lesions are present in many of the cranial nerve nuclei in the medulla and that the olfactory bulbs which are constantly involved following nasal instillation<sup>11</sup> were, with one exception referred to later, free from lesions.

*Test for Virus in the Olfactory Bulbs and Nasal Mucosa of Monkeys Infected by the Tonsillopharyngeal Route.*—In a previous study<sup>12</sup> it was found that, when infection occurs after nasal instillation, virus could be demonstrated in the olfactory bulbs from the third day to the termination of the disease, even though the nasal mucosa was only slightly infective and for a very short time early in the disease. The statement is commonly found in the literature that the nasal mucosa of the monkey is not only a good portal of entry for the virus but also a place for its exit. It is obvious that if the latter is generally true one cannot use the finding of virus in the human nasal secretions or mucosa as a point in favor of that region being the natural portal of entry. It appears, however, that the few positive observations on which the assumption of its nasal exit is based were obtained in monkeys that received the virus intracranially and that the results, therefore, might not be the same when the virus had invaded the central nervous system by way of certain peripheral nerves. Furthermore, it was desirable to determine to what extent the presence or absence of virus (as well as lesions) in the olfactory bulbs could be used as an index of whether or not the olfactory pathway had been used for invasion of the central nervous system, i. e. whether or not virus having entered some medullary nucleus would spread as far as the olfactory bulbs by the time the monkey died or was prostrate.

In the first series of tests there were four monkeys, all of which had received zinc sulfate nasal sprays before tonsillopharyngeal injection of the virus. Three of these had the bulbar type of the disease and the fourth had only paralysis of the extremities; one had died within twenty-four hours of the onset of paralysis, and the other three were killed when nearly prostrate, one, two and three days respectively after the onset of paralysis. Both bulbs were removed from each monkey with special precautions. A piece of each was sectioned and the rest ground in salt solution, and the entire suspension injected intracranially into a monkey. Neither a lesion nor virus was found in the olfactory bulbs of any of these monkeys.

In the second series of tests there were four monkeys which received no preliminary treatment of any kind

before tonsillopharyngeal injection of the virus. All had bulbar poliomyelitis. Two died within twenty-four hours, and the other two were killed when nearly prostrate on the third day after the onset of paralysis. The olfactory bulbs were studied as before, and in addition

TABLE 3.—Summary of Experiments

Experiment	Preliminary Treatment	Mode of Experimental Infection	No. of Monkeys Used	Total No. Developed Poliomyelitis	Number with Bulbar Signs
a	1% zinc sulfate nasal spray for 2 days before bilateral tonsillectomy	Nasal instillation after tonsillectomy with subsequent sprays of 10% virus into throat	4	0	—
	None (virus controls)	Nasal instillation	3	3	0
b	1% zinc sulfate nasal spray for 2 days before bilateral tonsillectomy	10% virus sprayed into throat before, immediately after, and for 3 days after tonsillectomy; tonsillectomy wounds swabbed with thick virus tissue	4	0	—
	None (virus controls)	Nasal instillation	2	2	0
c	1% zinc sulfate nasal spray for 2 days before virus	Injected by tonsillopharyngeal route; 1 cc. 10% virus on each side	3	2	1
	None (virus controls)	Nasal instillation	3	0	—
d	1% zinc sulfate nasal spray for 2 days before virus	Nasal instillation	3	3	0
		Subcutaneous injection; 1 cc. 10% virus suspension into right and left lower abdominal quadrants	6	0	—
		Injected by tonsillopharyngeal route; 1 cc. 10% virus on each side	6	4	3
		0.2 cc. 10% virus injected into each tonsillar area	6	0	—
		0.2 cc. 10% virus injected into each tonsillar area, followed immediately by tonsillectomy	6	0	—
e	None	0.2 cc. 10% virus injected into each tonsillar area, followed immediately by tonsillectomy, swabbing of wounds with virus tissue, and subsequent sprays of 10% virus into throat for 3 days	3	1	1
		Intracutaneous injection; 2 cc. 10% virus in 10 plaques in abdominal skin	6	0	—
		Injected by tonsillopharyngeal route; 1 cc. 10% virus on each side	6	6	5
	1% zinc sulfate nasal spray followed by virus instilled into the nose or sprayed into throat 1 to 3 mo. before present experiment; none of the monkeys had any signs of disease	Injected by tonsillopharyngeal route; 1 cc. 10% virus on each side	5	4	4

the entire nasal mucosa of each monkey was tested for virus. No virus was found in the nasal mucosa of any of these animals, and the olfactory bulbs of three of them contained neither virus nor lesions. The olfactory bulbs of the fourth monkey (paralysis for three days) contained the virus, and microscopic examination

revealed no lesions in one bulb while in the other there was evidence of the loss of a few mitral cells with invasion of polymorphonuclear leukocytes in their places; this was not associated with any meningeal or perivascular reaction. In view of the fact that this animal had no preliminary zinc sulfate nasal spray and because paralysis had been present for at least three days, two possible explanations may be advanced: (1) that in this case there was contamination of the olfactory mucosa, with the subsequent involvement of a few mitral cells (the failure to find virus in the nasal mucosa of this monkey cannot be held against this possibility) and (2) that, owing to the relatively long duration, the virus had spread from the medulla to one of the olfactory bulbs. At any rate, it would appear that the elimination of virus on the nasal mucosa in an animal that has succumbed to infection by another peripheral route is either rare or unlikely and that the failure to detect virus in the olfactory bulbs of at least seven of the eight monkeys tested is in good agreement with the other evidence that the virus did not invade the central nervous system by the olfactory pathway.

## COMMENT

The evidence presented in this communication shows conclusively that, while mere transitory contact between the normal or injured pharynx or tonsils of monkeys is not enough to produce poliomyelitis, it is possible to infect these animals when the virus in quantities of from 100 to 1,000 minimal cerebral infective doses is injected into the tonsillopharyngeal region and that this region is for some reason more sensitive than, for example, the abdominal cutaneous or subcutaneous tissue. The high incidence of the bulbar type of the disease among these monkeys, along with the other evidence that the virus did not produce the infection by invasion along the olfactory pathway, indicates that after tonsillopharyngeal injection the virus progresses along the local peripheral nerves. The high incidence of the bulbar form of the disease among the cases of human post-tonsillectomy poliomyelitis is what one would expect, therefore, if the infection occurred from the throat. If the virus in the human being behaved as it does in the monkey (and there is no definite evidence that such is the case), one would expect that for the development of post-tonsillectomy poliomyelitis the virus would have to be present in the secretions or in the tonsils during the operation and that infection would be facilitated by any procedure involving injections or postoperative suturing. That poliomyelitis virus can occur in the upper respiratory secretions and tonsils of apparently healthy human beings is already known,<sup>16</sup> and, although it is not yet clear whether or not the virus is more prevalent during the summer and early autumn than at other times of the year, it ought to be considered whether or not the season of the high incidence of poliomyelitis is a favorable period for nonemergency operations about the throat and mouth.<sup>17</sup>

Sixty-Sixth Street and York Avenue.

16. Flexner, Simon; Clark, P. F., and Fraser, F. R.: Epidemic Poliomyelitis: Fourteenth Note: Passive Human Carriage of the Virus of Poliomyelitis. *J. A. M. A.* 60:201 (Jan. 18) 1913. Taylor, E., and Amoss, H. L.: Carriage of the Virus of Poliomyelitis with Subsequent Development of the Infection. *J. Exper. Med.* 26:745 (Nov.) 1917. Kramer, S. D.: Detection of a Healthy Carrier of Virus of Poliomyelitis Without History of Contact. *Proc. Soc. Exper. Biol. & Med.* 32:1165 (April) 1935.

17. Attention may be called here to a recent report (Gard, S.: Nouvelles recherches sur l'épidémiologie de la poliomyélite, Office international d'hygiène publique 30:933 [May] 1938) of two cases of paralytic poliomyelitis which followed the extraction of teeth (seven teeth in one case and ten in the other) within six and ten days respectively.

## Clinical Notes, Suggestions and New Instruments

### LARGE RENAL CALCULUS

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In a review of the literature, Kreutzmann<sup>1</sup> of San Francisco lists only eight cases in which single renal calculi weighing more than 300 Gm. were removed. He found that the largest renal calculi the human body is capable of producing have been found at autopsy, at which stones have been discovered weighing from 1,500 to 2,000 Gm. The largest stone in this series was removed by Mylvaganan of England and weighed 1,440 Gm. To this series he adds his case with the successful removal of a solitary stone weighing 650 Gm. with the kidney substance included. Waterworth<sup>2</sup> removed a renal calculus weighing 1,100 Gm. only to have the patient die five and a half months later of a fungating carcinoma at the operative site, which had been found at operation to originate in the renal pelvis.

## REPORT OF CASE

*History.*—J. E. F., a white man, aged 55, a merchant, admitted to Emory University Hospital Dec. 12, 1936, complained of pain in the left flank. The patient gave a history of having passed a stone a month since he was 3 years of age. These hard yellow stones would soon become friable and crumble to dust when exposed to air. The passage of a stone was invariably preceded by colicky pain in the left flank, and occasionally by bloody urine. In 1908 he passed the largest stone. It was the size of a "field pea," and he required medical attention at that time. He was advised to have the kidney removed but he refused operation. Stones had continued to come at monthly intervals, and their physical characteristics remained unchanged. Although he had continued to work almost without interruption, he stated that a dull aching pain in the left flank had been present for many years. Until of late he had been able to obtain relief at night by sleeping on his left side. In the last two years he had lost 25 pounds (11 Kg.) and for the past three weeks the pain had been increasing in severity. He stated that there was no nocturia except during dysuria accompanying the passage of a stone.

About three years before admission he began to suffer from a "burning" sensation beneath the sternum with periods of freedom from discomfort of as long as two or three months. Sodium bicarbonate was taken for relief of discomfort, which was usually at night and about two hours following meals. There was no hematemesis or tarry stools.

*Examination.*—The patient was obese, weighing 190 pounds (86 Kg.). The blood pressure was 140 systolic, 88 diastolic. Physical examination was negative except that there was generalized tenderness on the left side of the abdomen. On palpation a hard rounded smooth mass protruded from under the left costal margin to a level of 3 cm. below the umbilicus and as far medially as the parasternal line. The mass descended slightly with inspiration but could not be moved from side to side. There was resistance at the left costovertebral angle. The smooth edge of the liver was palpable for 2 cm. below the right costal margin in the midclavicular line.

The blood count showed a slight secondary anemia and 5 per cent eosinophils. The latter was found to be constant on repeated counts. Chemical analysis of the blood was negative. Urinalysis revealed specific gravity 1.016, reaction acid, albumin 1 plus; centrifuged and stained, it showed many pus cells and many organisms of varied structure.

The vesical mucosa had a granular appearance but was otherwise normal. When the left ureter was catheterized with a No. 5F. catheter an obstruction was met at 28 cm. A yellow cloudy urine dripped constantly, increasing in flow with external pressure on the left flank. A 10 cc. specimen of urine from the left kidney contained 0.1 cc. of sediment, which was

From the Department of Urology, Emory University School of Medicine.

1. Kreutzmann, H. A.: Large Renal Calculus: Report of a Case, *Am. J. Surg.* 5:360 (Oct.) 1928.  
2. Waterworth, S. J.: Giant Renal Calculus: Carcinoma of the Kidney Pelvis: Report of a Case, *J. Urol.* 28:77 (July) 1932.



composed entirely of pus cells and no bacteria. Phenol-sulfonphthalein appeared on this side as a faint trace at the end of thirty minutes. A flat roentgenogram revealed a large calcified tumor in the left upper part of the abdomen occupying the position of the left kidney. Its lateral, medial and inferior margins were smooth. The upper border was slightly irregular. It measured 15 by 17 by 13 cm. The opaque catheter in the left ureter entered or passed behind the mass. At the lower border an irregular projection suggested stone in the inferior calix. Attempts to inject the left pelvis with opaque fluid failed. The right kidney was not infected and was of normal phenol-sulfonphthalein output; a pyelogram was negative.

**Operation.**—A left nephrectomy was performed Jan. 14, 1937, under ethylene anesthesia. An incision 30 cm. long was made in the left flank. The perinephric fat was stripped away and the lower pole of an enormous mass composed of kidney substance and stone was exposed. It was free of thick adhesions except on the anterosuperior aspect, where it adhered firmly to the peritoneum. A hard smooth stone could be palpated through the renal parenchyma, the latter being about 1.5 cm. in thickness and showing marked cystic degeneration. The kidney substance had been flattened to such an extent that it covered two thirds of the stone, while the enormously dilated extrarenal portion of the kidney pelvis covered the remaining third. Attempts to deliver the mass into the incision were of no avail, and it was decided to incise the lower pole of the kidney and deliver the stone. Delivery under this plan was more difficult than had been expected, as a good purchase could not be obtained on the stone. Finally it was shelled out, and in the process several of the formed projections in the calices were broken off. The kidney pedicle consisted of a thick fibrous mass of tissue which it was impossible to skeletonize. Kelly clamps were applied to this mass and each portion was cut and tied separately. The entire kidney was removed.



Fig. 1.—Bilateral pyelogram showing enormous calculus of left kidney and normal right kidney.

The patient's blood pressure had dropped to shock level, and 1,500 cc. of physiologic solution of sodium chloride was given intravenously while the incision was being closed. The time required for the operation was two hours and twenty minutes. The patient was given a 600 cc. transfusion of whole blood before leaving the operating room.

**Postoperative Course.**—Inhalations of carbon dioxide were given twice a day for three days. Twelve hours after operation the patient went into mild shock as a result of blood oozing from the incision, and another 500 cc. transfusion of whole blood was given. Immediately after operation he vomited a

large amount of dark clotted blood, which he continued to do for several days. This suggested either trauma to the stomach or the presence of an old peptic ulcer, and all fluids by mouth were withheld for five days, at which time he began to take a Sippy diet. Three thousand cubic centimeters of 5 per cent solution of dextrose in distilled water was given daily during

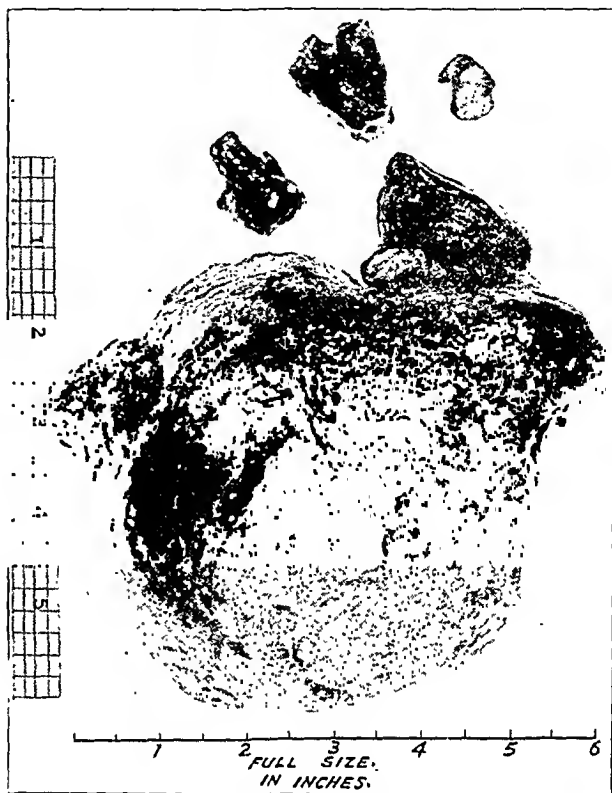


Fig. 2.—Appearance of stone. Pieces were broken off during operation.

this period. On the second postoperative day the temperature had reached 101.4 F. and the pulse 140 per minute. Both pulse and temperature returned to normal at the end of the second day and remained so until he was dismissed from the hospital on the twenty-first postoperative day.

An x-ray examination of the upper part of the gastrointestinal tract revealed no ulcer but showed evidence of irritation of the gastric musculature. The stomach was high in the abdomen. Its lower pole dropped into the space previously occupied by the renal calculus.

#### **PATHOLOGIC REPORT**

The specimen of kidney and calculus weighed 2,265 Gm. When the operative incision in the kidney was continued upward so as to lay it open, the cortex was found to be almost destroyed and quite uneven, and the calices were markedly dilated and fused into a large saclike pelvis which covered the calculus. Microscopic examination of sections showed the glomeruli to vary considerably in size, some of them being quite small and atrophic and others completely replaced by hyaline changes. Practically all tubules showed varying degrees of albuminous degeneration with some epithelial desquamation. Other areas showed complete fibrous replacement of parenchyma. The stone alone weighed 1,565 Gm. Several fragments had a staghorn appearance and fitted into the calices of the kidney.

Chemical analysis of the stone revealed calcium, magnesium, phosphates, carbonates and a trace of sulfur and oxylates. There were no urates.

#### **COMMENT**

It is worthy of note that at the time of cystoscopic, pyelographic and functional study we found a faint trace of phenol-sulfonphthalein appearing from the left kidney mass at the end of thirty minutes. This would seem to indicate that even in the presence of this enormous stone, with resultant thinning out of the cortex, the kidney was still able to secrete some

urine. That the patient was able to supply urinary constituents which go to form stones may account for its reaching this enormous size over a period of many years. The patient lived about one year after this operation in perfect health.

On Jan. 15, 1938, a year and a day after the nephrectomy, a laparotomy was done by a general surgeon, who found a malignant growth suspected to have originated in the head of the pancreas. The gallbladder was drained at that time. The patient died about four weeks after the laparotomy.

As far as we have been able to ascertain from the literature, this is the largest single renal calculus that has successfully been removed.

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#### AN OPERATION FOR PARALYSIS OF THE INTRINSIC MUSCLES OF THE THUMB

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The inability to oppose the thumb to the other fingers owing to paralysis of the intrinsic thenar muscles leads to "flat hand" deformity. This is primarily due to the loss of function in the *musculus opponens pollicis*, but the short flexor and short abductor are also concerned in the production of this deformity. For many years I have been practicing a tendon transplanta-

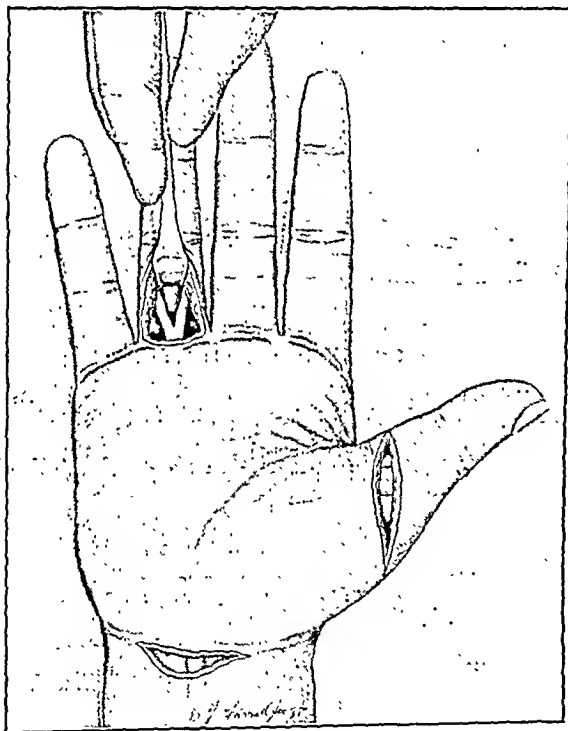


Fig. 1.—Step 2 of operation.

tion to correct the disability caused by the paralysis and to restore the function of the thumb.

As the thumb had to be drawn to the medial side of the hand, I chose for transplantation the flexor sublimis of the ring finger since this would make the process of education easier.

#### TECHNIC OF OPERATION

STEP 1.—The skin is opened through the transverse fold at the base of the ring finger. By retracting the skin distally, one can reach the insertion of the bifurcated tendon of the flexor sublimis with a tenotome, with which it is then cut through on each side.

STEP 2.—The sheath of the flexor pollicis longus is opened through an incision at the deep fold proximal to the metacarpophalangeal joint of the thumb (fig. 1).

STEP 3.—An incision is made in one of the transverse folds of the palmar aspect of the wrist. The cut tendon of the

ring finger is then drawn out through this incision. It is passed up the sheath of the long flexor of the thumb and brought out at the incision at the metacarpophalangeal joint of the thumb (fig. 2).

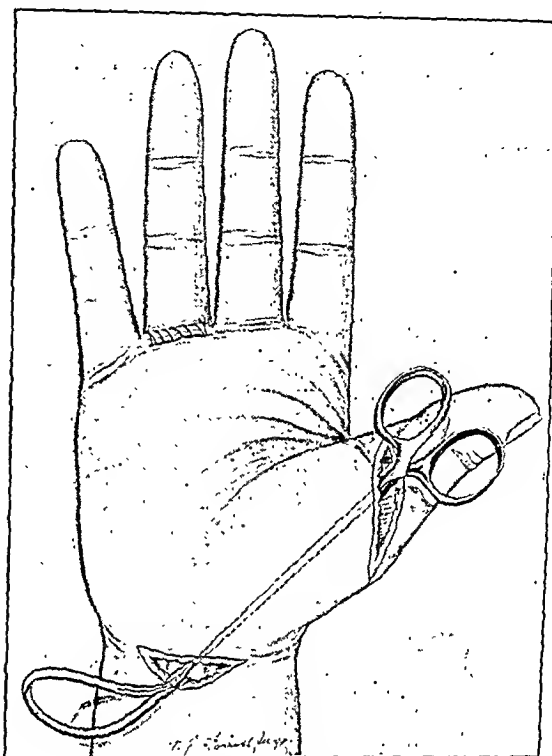


Fig. 2.—Step 3 of operation.

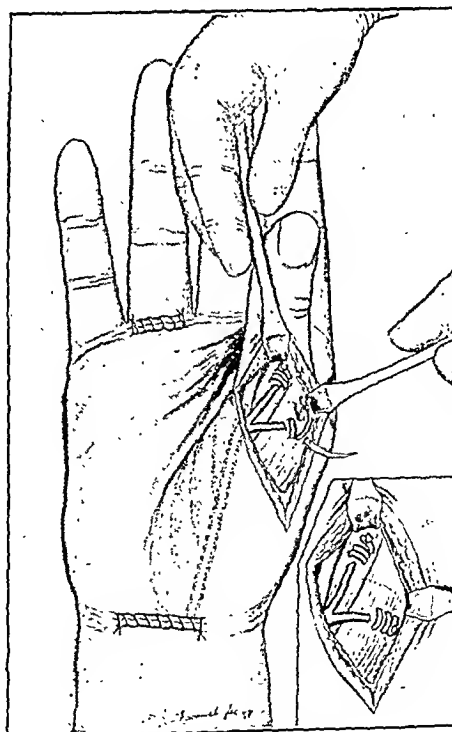


Fig. 3.—Step 4 of operation.

STEP 4.—The attachment of the short flexor and of the *opponens pollicis* is next exposed by dissecting up the skin distally. One part of the bifurcated tendon of the superficial flexor of the ring finger is stitched to the attachment of the

short flexor with the first phalanx in flexion. The other part is stitched to the outer edge of the opponens pollicis with the thumb in opposition. The living suture method is employed; that is, the tendon is the stitch and is sewn into place with the author's living suture needle. This needle has a cutting point; the tendon is actually threaded in the needle and sewn into its new attachment. The tendon of the flexor sublimis may be split so as to lengthen the stitches (fig. 3). The wounds are closed and dressings applied with the thumb strapped in the position of opposition and flexion of the first phalanx. This position is maintained for about ten days, after which active movements are performed.

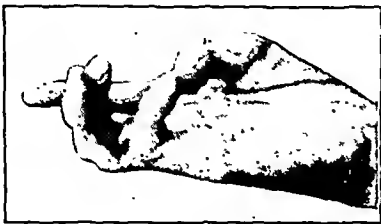


Fig. 4.—Thumb in opposition after operation.



Fig. 5.—Thumb in abduction after operation.

#### REEDUCATION

It is easy for the patient to educate himself to use the transplanted tendon, for when he attempts to flex the ring finger the thumb is drawn into opposition to that finger. The superficial flexor muscles of the little finger or of the medial finger may also be used for this operation. Figures 4 and 5 show the result of this transplantation in a typical instance of the deformity.

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#### NICOTINIC ACID IN THE TREATMENT OF PELLAGRA REPORT IN A CASE OF MARKED DEMENTIA

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In recent months there have been quite a few references in the medical literature to the use of nicotinic acid (3-pyridine carboxylic acid) in the treatment of pellagra.<sup>1</sup>

Only one of these reports has stressed the fact that the patient had dementia, and it was mentioned as a mild dementia and was present only at intervals.<sup>1b</sup>

For that reason, it is believed that the report of a case recently observed, in which the patient is still under treatment, will be of interest. Also a comparison may be drawn between the effectiveness of the parenteral and the oral administration of nicotinic acid for pellagrous dementia, as in the case reported here the acid was administered only by the oral route, while in the one previously reported it was administered mostly by the parenteral route.

#### REPORT OF CASE

Mrs. M. G., aged 59, white, was first seen March 20, 1938. She was in a state of marked dementia, simulating a catatonic type of schizophrenia.<sup>2</sup> She complained in no way of feeling badly but rather repeatedly stated that she had never felt better in her life. Medical aid was sought because of the rather sudden change in her mental state. She carried on an incessant monologue, became quite violent at frequent intervals and would strike any one within reach or throw any object on which she could lay her hands. Questions directed to her were completely ignored.

1. (a) Relation of Nicotinic Acid to Human Pellagra, current comment, J. A. M. A. 109: 1203 (Oct. 9) 1937. (b) Smith, D. T.; Ruffing, J. M., and Smith, Susan Gower: Pellagra Successfully Treated with Nicotinic Acid, *ibid.* 109: 2054 (Dec. 18) 1937. (c) Spies, T. D.; Cooper, Clark, and Blankenhorn, M. A.: The Use of Nicotinic Acid in the Treatment of Pellagra, *ibid.* 110: 622 (Feb. 26) 1938. (d) Fouts, P. J.; Helmer, O. M.; Lepkowsky, Samuel, and Jukes, T. H.: Treatment of Human Pellagra with Nicotinic Acid, *Proc. Soc. Exper. Biol. & Med.* 37: 405 (Nov.) 1937.

2. Sadler, W. S.: Theory and Practice of Psychiatry, St. Louis, The C. V. Mosby Company, 1936, p. 827.

Her past history was irrelevant except for the fact that she had suffered from endemic pellagra for the past six years. Symptoms were noted each year, beginning in the spring and continuing until cold weather. They consisted of loss of appetite, diarrhea, glossitis, drying and discoloration of the backs of the hands and insomnia. During these stages of exacerbation of symptoms she would take pills of ferrous carbonate, Fleischmann's yeast cakes and dilute hydrochloric acid, a regimen of treatment recommended six years before by an internist. As soon as the symptoms abated she would stop all forms of medication.

The present symptoms apparently began in January 1938, when she again noticed a diminution in appetite, insomnia and tingling and burning of the feet and legs as high as the knees. About this same time members of the family noticed that she was not quite normal mentally. Her condition gradually became worse, until there was a complete loss of appetite, vomiting of practically everything taken into the stomach, marked insomnia and frequent attacks of severe depression. The day she was first seen she suddenly became violent and exhibited all the signs of complete loss of the mind.

Owing to her violent mental state examination was extremely difficult. An exacerbation of pellagra was found to be present. The dorsa of both hands were very dry and red; some pigmentation from a preceding involvement was present. The tongue and buccal mucosa were slick and red. The skin over the entire body was dehydrated and very rough. Superficial sensations in the feet and legs were apparently diminished. It was impossible to determine the activity of reflexes because of the violent motions and complete lack of cooperation. The results of physical examination were otherwise negative except for observation of a slight irregularity of the pulse and a blowing systolic murmur over the base of the heart. The blood pressure was 142 systolic, 94 diastolic. An electrocardiograph was not available. Examination of the blood showed slight anemia: red cells 4,250,000, hemoglobin content 85 per cent (Sahli), and white cells 6,800: 60 per cent polymorphonuclear leukocytes, 38 per cent lymphocytes, 2 per cent eosinophils. The specimen of urine submitted for analysis was highly colored, acid, with a specific gravity of 1.032, albumin 2 plus and no sugar; under the microscope pus cells, red blood cells and coarsely and finely granular casts were observed.

An attempt was made to institutionalize the patient in a nearby medical center but this was not successful, so treatment was begun at home and consisted of administration of liver extract and vitamin B<sub>1</sub>. All medication and fluids were, of necessity, given parenterally. One of the barbiturates, in doses of 3 grains (0.2 Gm.), was given every three or four hours for the mental condition.

This routine was followed for seven days, during which time the patient was constantly restrained. Attempts were repeatedly made to give some fluids and food by mouth, and after the fourth day some of these were partially successful. From the fourth through the eighth day she was given about 30 Gm. of dried brewers' yeast (all that could be given) daily in addition to the other treatment.

After seven days of this treatment no improvement could be noticed. The physical signs and mental symptoms were just the same as at the beginning of treatment.

On the eighth day treatment was begun with nicotinic acid, administered orally, in doses of 100 mg. five times a day, as recommended by Spies, Cooper and Blankenhorn.<sup>1c</sup>

Twenty-four hours after the administration of nicotinic acid was started she asked for a drink of water, the first time she had asked for anything in nine days. Twelve hours later she would take food placed in her mouth. This was the first indication of any improvement whatever.

Forty-eight hours after the first dose there was definite improvement, both in her physical appearance and in her mental symptoms. She still talked at random and occasionally was violent, but the improvement was easily seen. She would frequently ask for water and would attempt to take all foods given her. At this time the use of liver and vitamin B was stopped, and the brewers' yeast was increased to 180 Gm. a day.

Seventy-two hours after the beginning of treatment with nicotinic acid the mucosal and cutaneous signs were practically



nil, and only at infrequent intervals was there any indication of mental restlessness. She had slept well the preceding night without the aid of the barbiturates. She said she was hungry and that all foods tasted good for the first time in over two months.

On the fourth day of treatment she became perfectly rational; cutaneous signs had disappeared except for a few patches of pigmentation on the backs of the hands. At the time of this report, seven days after the administration of nicotinic acid was started, she has been rational for seventy-two hours without once exhibiting symptoms of depression or dementia.<sup>3</sup> Her facial expression is normal, the skin is normal except for slight patchy pigmentation, the tongue is only slightly red on the borders, and her appetite is excellent. The blood pressure, pulse and murmur are the same as at the first examination.

Examination of the blood reveals: red cells 4,550,000, hemoglobin content 94 per cent (Sahli), white cells 6,500; 60 per cent polymorphonuclear leukocytes, 40 per cent lymphocytes.

On analysis the urine is normal in appearance, acid, with a specific gravity of 1.018, no albumin and no sugar. Under the microscope occasional pus cells and casts are observed.

It is believed that in this case full credit for recovery is due to the treatment with nicotinic acid.

#### COMMENT

As was stated, the patient was started on a dose of 500 mg. of nicotinic acid daily in five doses of 100 mg. each. No effects of the drug were noticed which could be considered side effects or contraindications; not even the sensation of heat and redness of the skin was noticed, as is reported in most cases. To determine whether any symptoms would develop after prolonged administration, this patient was kept on a daily dose of 500 mg. until a total of 8 Gm. had been taken. Then the dose was dropped to 300 mg. daily until another 6 Gm. had been taken, making a total of 14 Gm. over a period of two months. On only two occasions were redness and warmth of the skin noticed; this condition lasted for about fifteen minutes each time and caused the patient no particular discomfort.

After the first week of the administration of nicotinic acid the patient has been on a full pellagra-preventive diet, with dried yeast (from 120 to 180 Gm. daily).

Physical examination May 22 showed that the patient was a normal healthy woman without any indications of pellagra or dementia.

From observations on this one case it appears that the toxicity, if any, of nicotinic acid is negligible. It also appears that by the use of this drug in an advanced case of pellagra there is a much better chance of placing the patient in a position to take a pellagra-preventive diet than would otherwise exist. Is it not possible that the stomatitis, intestinal cramping and diarrhea bring about a dislike for food because of the difficulty in taking it and thereby set up a vicious circle? It is not likely that any one would look on nicotinic acid as a substitute for food. In the cases so far reported it brings about a rapid abatement of symptoms, so that these patients can be placed on the proper diet.

Such recurrences could hardly be attributed to the non-specificity of the drug. Some of these persons are alcoholic addicts who are going to take whisky even to the exclusion of necessary foods; there are others who are unable to get the proper foods because of their standard of living. Some patients will, no doubt, have relapses, it being assumed that the cause of pellagra is dietary deficiency.

#### SUMMARY

1. A woman with severe pellagrous dementia recovered after seven days of treatment with nicotinic acid in doses of 100 mg. five times a day.

2. Apparently a drug has been found which will greatly simplify the treatment of pellagra. Since the cost of the medication is so small, any one suffering from pellagra should be able to get it.

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3. An additional report of the use of nicotinic acid for pellagra has just appeared in *THE JOURNAL*. (Spies, T. D., and Armg. C. D.: *The Effect of Vitamin B<sub>1</sub> on the Peripheral Neuritis of Pellagra*, J. A. M. A. 110:1081 [April 2] 1938). The dementia of one of the patients discussed in this article was more marked than that of the one originally referred to<sup>2b</sup> but still was of much less degree than the one here reported.

## Special Article

### PHYSIOLOGY AND PATHOLOGY OF VITAMIN D

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*This article and others recently published or to be published comprise a new series on the present status of our knowledge of the vitamins. They have been prepared under the general auspices of the Council on Pharmacy and Chemistry and the Council on Foods. The opinions expressed are those of the authors and not necessarily the opinions of either council. Reprints are not available but the articles will be published later in book form.—Ed.*

Vitamin D prevents or cures rickets. Until recently this factor was thought to be a single substance. The active compound formed by the irradiation of ergosterol was considered identical with the antirachitic agents present in natural products or formed in animals or foods by ultraviolet irradiation. It was found, however, that different sources of vitamin D might have different relative values, depending on whether the products were tested with rats or with chickens. It was found also that several different sterols, carefully purified, could be activated by various methods. The multiple nature of vitamin D thus became established, and Bills recently has described ten different substances which are capable of exerting a vitamin D effect. As more information becomes available regarding the chemical nature of the different forms of vitamin D, there may be afforded a clearer understanding of the physiologic and pharmacologic aspects of each active substance. At the present time, however, vitamin D can be detected only by its effect in the prevention or alleviation of rickets. Thus it happens that different sources of vitamin D have qualitatively the same effect on the animal body.

#### RICKETS

Rickets is a condition made manifest by defects in the calcification of growing bones. It may be recognized by roentgenologic examination of the bones or, in experimental animals, by chemical analysis of the bone ash, by histologic examination or by other methods. The court of last resort is the histologic picture of the bone.

The sequence of events in the production of normal and of rachitic bone has been epitomized by Wolbach.<sup>1</sup> Growth in the length of the long bones occurs by endochondral formation of bone. In the normal tibia of the growing rat, for example, the epiphyseal cartilage at the upper end of the shaft is a narrow plate. This is firmly supported by bone, in the form of transverse trabeculae or a thin fenestrated plate, on the epiphyseal side, and it is uniformly penetrated by capillaries on the diaphyseal side. Growth occurs by the continuous proliferation of cartilage cells, which are arranged in orderly columns on the epiphyseal side, and by the simultaneous degeneration of the matured cartilage cells on the diaphyseal side. In the spaces left by the degeneration and disappearance of the cartilage cells there appear capillaries and bone-forming cells, or osteoblasts.

From the Department of Pediatrics of the Harvard University Medical School and the Infants' and Children's Hospitals.  
1. Shohl, A. T., and Wolbach, S. B.: Rickets in Rats: XV. The Effect of Low Calcium-High Phosphorus Diets at Various Levels and Ratios upon the Production of Rickets and Tetany. *J. Nutrition* 11: 275 (March) 1936.

These are responsible for the deposition of the bony matrix. The growth of bone by endochondral formation of bone, according to Wolbach, is achieved "by a continuously retreating gap in the continuity of tissues, maintained on the epiphysial side by continuous renewal of cartilage cells and on the diaphysial side repaired by vascular outgrowth comparable to repair of any defect of tissues by the process of organization or granulation tissue formation. In normal growth there presents on the diaphysial side of the narrow cartilage a continuous layer of clear or empty cartilage cells forming an almost straight line."

The first histologic evidence of rickets is the cessation of the degenerative sequences of the cartilage cells. The layer of clear cells does not form, and consequently there is no ingrowth of capillaries and osteoblasts. If the degree of rickets is slight, there is a moderate increase in the width of the epiphysial cartilage. Because the cessation of degenerative sequence in the cartilage cells does not occur simultaneously in all the affected cells, the epiphysial cartilage presents an irregular border on the diaphysial side. The width of the cartilage increases because of continued activity of the proliferative zone and the survival of cells on the diaphysial side.

After the cessation of degenerative changes in the cartilage cells of the rachitic bone, calcification of the cartilaginous matrix ceases, and osteoid material accumulates around the capillaries of the diaphysis. In advanced rickets some changes occur that are probably brought about by the pressure of weight bearing. The uncalcified cartilage of the diaphysial border often is stratified transversely in places, and the osteoid material, which is also uncalcified and which increases in amount with the duration of the dietary deficiency, becomes molded. In long-continued rickets there may be a disappearance of the cancellous bone of the diaphysis and a marked resorption of cortical bone. "The degree or severity of rickets may be recorded on the basis of the prominence of anatomical changes. Obviously two factors enter into the production of the pathological picture; the duration of the deficient diet and the degree of the deficiency."<sup>1</sup>

The changes in the bones in rickets result in those gross manifestations which are recognized clinically;<sup>2</sup> namely, enlargement of the wrists, knees and ankles, bowed legs, beading of the ribs and the rachitic rosary, Harrison's groove and craniotabes.

When vitamin D is given to rachitic animals, calcification begins again at the line of provisional calcification. The first histologic evidence of repair is the presence along the diaphysial border of degenerated cartilage cells. This effect is visible at the end of twenty-four hours and is accompanied by extensive vascular penetration within forty-eight hours. The penetration of blood vessels permits the deposition of the bone-forming salts. There is thus produced the so-called line test for healing. The mass of irregular cartilage cells becomes arranged into short, orderly, parallel columns of a few cells. Osteoid material is no longer formed. A remarkable degree of repair takes place, but for a long time the expert pathologist can detect traces of the former abnormality.

It has now become generally recognized that there is no fundamental pathologic condition in the rachitic

bone which prevents its calcification. Shipley<sup>3</sup> reported in 1924 that slices of rachitic bone and cartilage became calcified when placed in normal blood serum. Later Shipley, Kramer and Howland<sup>4</sup> showed that suitable solutions of inorganic salts would bring about a similar result. This has been confirmed by Robison and Soames.<sup>5</sup> Further, as shown by Harris,<sup>6</sup> there is no reason to believe that vitamin D acts directly on bone cells to promote calcification. The action of vitamin D, instead, is so to alter the body fluids that bone salts may be incorporated into the growing bone. Rickets may be regarded as a fault in the metabolism of calcium and phosphorus. In this sense, rickets is the cause and not the result of the bony lesion.

#### CHEMISTRY OF CALCIUM AND PHOSPHORUS PRECIPITATION

Whatever may be the cause of the defect in metabolism which leads to rickets, the pathogenesis lies in the condition of the  $\text{Ca}^{++}$  and  $(\text{PO}_4)^{---}$  in the blood serum.<sup>7</sup> Here is found the material available for excretion by the intestine or kidney or for deposition in bone or other tissues of the body. It has been mentioned that minerals will precipitate in rachitic cartilage in vitro either in normal serum or in properly constituted inorganic solutions. This does not imply that the formation of bone is an inorganic process. It takes place in the living cell, and the proper type of cartilage degeneration is essential to the entrance of the blood vessels. What takes place in the space between the cells is quite obscure, but certainly the proper inorganic environment is essential to deposition. It can best be expressed in physicochemical terms.<sup>8</sup> Only when the adequate concentration of calcium, phosphate and carbonate ions is present can precipitation of the salt take place. This complex salt is a dahllite,  $n\text{Ca}_3(\text{PO}_4)_2\text{CaX}$  in which the  $n$  varies between 2 and 3 and the  $\text{X}$  may be  $\text{CO}_3$ ,  $\text{OH}$  or  $\text{F}$ . It may be regarded as a solid solution of  $\text{CaCO}_3$  in  $\text{Ca}_3(\text{PO}_4)_2$ . The ratio of two mols of  $\text{Ca}_3(\text{PO}_4)_2$  to one mol of  $\text{CaCO}_3$  is practically constant for adult bone, which by analysis gives 12 per cent  $\text{CaCO}_3$  and 88 per cent  $\text{Ca}_3(\text{PO}_4)_2$ .

By the use of a frog heart method for the determination of ionized calcium, McLean and Hastings<sup>9</sup> were able to show that the larger part of the serum calcium was combined with protein. Of the usual 10 mg. per hundred cubic centimeters of serum, about 4.5 mg. or 1.1 millimols is ionized. According to their calculations not over 5 per cent of the total calcium can be in diffusible nonionized form.

The composition of the salt precipitated from a solution containing  $\text{Ca}^{++}$ ,  $(\text{PO}_4)^{---}$  and  $(\text{CO}_3)^{--}$  gradually increases in  $\text{CO}_2$  content. Logan and Taylor<sup>10</sup> have shown that the solubility product varies with the amount of substrate present and that a higher concentration is necessary to initiate the formation of the precipitate than to permit its subsequent formation.

3. Shipley, P. G.: Healing of Rickety Bones in Vitro, *Bull. Johns Hopkins Hosp.* 35:304 (Sept.) 1924.

4. Shipley, P. G.; Kramer, B., and Howland, J.: Calcification in Vitro, *Biochem. J.* 20:379 (no. 2) 1926.

5. Robison, Robert, and Soames, Katharine M.: Possible Significance of Hexosephosphoric Esters in Ossification: Calcification in Vitro, *Biochem. J.* 24:1922 (no. 6) 1930.

6. Harris, L. J.: Mode of Action of Vitamin D: Parathyroid Theory; *Clinical Hypervitaminosis*, *Lancet* 1:1031 (May 14) 1932.

7. Schmidt, C. L. A., and Greenberg, D. M.: Occurrence, Transport and Regulation of Calcium, Magnesium and Phosphorus in Animal Organism, *Physiol. Rev.* 13:297 (July) 1935.

8. Hastings, A. B.: Factors Governing the Calcium Equilibria in the Body, *New England J. Med.* 216:377 (March 4) 1937.

9. McLean, F. C., and Hastings, A. B.: The State of Calcium in the Fluids of the Body: I. The Conditions Affecting the Ionization of Calcium, *J. Biol. Chem.* 108:285 (Jan.) 1935.

10. Logan and Taylor: Cited by Hastings.<sup>8</sup>

2. Hess, Alfred: Rickets, Osteomalacia and Tetany, Philadelphia, Lea & Febiger, 1929. György, Paul: Umsatz der Erdalkalien (Ca, Mg) und des Phosphate, *Handb. d. norm. u. path. Physiol.* 16:1553-1641, 1931; *Rachitis und Tetanie*, Berlin, Julius Springer, 1929.

Thus, although the concentrations of these ions at the site of calcification are as yet unknown, the advances that have recently been made in the quantitation of  $\text{Ca}^{++}$ ,  $(\text{PO}_4)^{---}$  and  $(\text{CO}_3)^{--}$  and the solubility product constant necessary for precipitation in bone bring chemical explanation much closer.

#### PHOSPHATASE

The enzyme phosphatase discovered by Robison<sup>11</sup> has the property of splitting organic phosphorus compounds such as hexose phosphate into inorganic phosphate. This enzyme occurs in largest amount in the cartilage but appears also in the kidney, bowel and blood serum. Just what the function of phosphatase in the serum may be is not known, for the acid soluble phosphorus is present almost entirely as inorganic phosphate. Kay<sup>12</sup> regards it as a "leakage" from tissues of higher content. It may deal with the correction of phosphates by way of the kidney or bowel or the metabolism within the cell. Such a liberation of phosphate may be a step in the mechanism of carbohydrate metabolism or in muscle function. Certainly, if phosphorus esters were present in bone tissue, the local increase of inorganic phosphate would be an important step in the precipitation of calcium phosphate. However the phosphatase acts, there is no question that in diseases of the bone, especially resorptive ones in which osteoblastic activity is increased, the phosphatase of the serum is increased. Such is the case in rickets. Its increase is perhaps the first definite evidence of development of the rachitic condition, antedating roentgenogram changes and alterations in the blood serum phosphate. The content is high in active rickets. When vitamin D is administered it decreases toward normal, but more slowly than the other values; the phosphatase may not reach a normal content for several months after there is evidence of healing.<sup>13</sup> The increase of phosphatase in low phosphorus rickets thus acts as a protective mechanism.

#### HYPERVITAMINOSIS D

When huge excesses of vitamin D are given, there results a definite pathologic condition called hypervitaminosis D.<sup>14</sup> It is an exaggerated form of the physiologic or therapeutic effect of this vitamin. The calcium and the phosphate level in the blood are raised above normal. Calcification takes place at an increased rate, so that on roentgen or histologic examination the deposition of minerals at the provisional zone of calcification is usually dense. When the dose is sufficiently large, about a thousand times the therapeutic dose, the deposition of minerals at the epiphyses is made at the expense of that in the shaft. The balances of calcium and phosphorus become negative.<sup>15</sup> Metastatic calcification now takes place. The organs most affected are the tubules of the kidneys, blood vessels, heart, stomach and bronchi. There is evidence of irritation and degeneration in these tissues and in the liver. Under these conditions the animals lose weight rapidly, have intense diarrhea and die in from five to fourteen days.

11. Robison, Robert: The Significance of the Phosphoric Esters in Metabolism, Herter Lectures, New York, New York University Press, 1932.

12. Kay, H. D.: Plasma Phosphatase: Enzyme in Disease, Particularly in Bone Disease, *J. Biol. Chem.* 89: 249 (Nov.) 1930.

13. Bodansky, Aaron, and Jaffe, H. L.: Phosphatase Studies; Serum Phosphatase in Diseases of Bone; Interpretation and Significance, *Arch. Int. Med.* 54: 88 (July) 1934. Morris, Noah; Stevenson, Mary M.; Pedan, Olive D., and Small, Jean M. D.: The Significance of Plasma Phosphatase in the Diagnosis and Prognosis of Rickets, *Arch. Dis. Childhood* 12: 45 (Feb.) 1937.

14. Shohl, A. T.; Goldblatt, Harry, and Brown, H. B.: The Pathological Effects upon Rats of Excess Irradiated Ergosterol, *J. Clin. Investigation* 8: 505 (June) 1930. Harris.<sup>6</sup>

15. Shohl, A. T., and Brown, H. B.: Rickets in Rats: XI. The Alteration of Calcium and Phosphorus Metabolism of Normal and Ricketic Rats Produced by Irradiated Ergosterol, *J. Biol. Chem.* 86: 245 (March) 1930.

With smaller doses death comes later or the animal survives. Animals which live show the lesions described at least six months afterward. Healing of rickets takes place with diets which are deficient in either calcium or phosphorus. Calcification is less severe and more delayed, but the degenerative changes are as severe as those found in animals fed a normal diet.

#### RELATION OF RICKETS TO GROWTH

Body growth and development are coordinated with, and limited by, skeletal growth. Paucity of minerals necessary for the formation of the bones retards not only the development of the skeleton but that of the entire body. Because bone salts are predominantly salts of calcium and phosphorus, it is not surprising that the ingestion, absorption, assimilation and utilization of these two elements are the principal factors which determine the development of the bone. Osborne and Mendel<sup>16</sup> showed that calcium or phosphorus could be the limiting factor of growth. Shohl and his collaborators<sup>17</sup> extended their studies to show that even with liberal additions of vitamin D to diets restricted in phosphorus, growth was limited to as much as 40 per cent of the normal.

It has long been a clinical dictum that the manifestations of rickets are proportional to the growth of the infant—"no growth, no rickets"—but from studies of experimental rickets it is obvious that the condition may be present without increase in weight or even with a decline in weight. In no case of experimental rickets is the growth as great as normal. With an otherwise adequate diet it is primarily the utilization of calcium and phosphorus which determines the rate of growth, and it is the interrelation of calcium and phosphorus and vitamin D which determines the development or the cure of rickets.

#### RELATION OF RICKETS TO DIET

The successful production of experimental rickets depends on the proper regulation of the calcium and phosphorus of the diet in the absence of vitamin D. In children and in some experimental animals, e. g., dogs,<sup>18</sup> a deficiency of vitamin D alone, without great distortion of the diet, is sufficient to produce rickets. With rats the calcium and phosphorus of the diet must be restricted or fed in unusual proportions. Complete reviews of the earlier literature may be found in the works of Goldblatt,<sup>19</sup> Hess,<sup>2</sup> György,<sup>2</sup> and Gubner.<sup>20</sup> Briefly, it may be recalled that McCollum and his collaborators<sup>21</sup> investigated a wide variety of diets and obtained their best results with a diet of high calcium and low phosphorus content. They also reported success with low calcium and high phosphorus diets, although with these the bony lesions differed slightly from those which are found in children. When the calcium and phosphorus were about equal, they did not obtain rickets in rats. Sherman and Pappenheimer<sup>22</sup> and Steenbock and

16. Osborne, T. B., and Mendel, L. B.: The Inorganic Elements in Nutrition, *J. Biol. Chem.* 34: 131 (April) 1918.

17. Shohl, A. T.; Brown, H. B.; Chapman, E. E.; Rose, C. S., and Saurwein, E. M.: The Evaluation of the Phosphorus Deficiency of the Rickets-Producing Diet, *J. Nutrition* 6: 271 (May) 1933.

18. Mellanby, Edward: Experimental Rickets, Medical Research Council, Special Report Series, no. 61, London, His Majesty's Stat. Off., 1921. Shohl, A. T., and Bennett, H. B.: Rickets in Dogs: Metabolism of Calcium and Phosphorus, *J. Biol. Chem.* 76: 633 (March) 1928.

19. Goldblatt, Harry: Die neuere Richtung der Experimentellen Rachitisforschung, *Ergebn. d. allg. Path. u. path. Anat.* 25: 58, 1931.

20. Gubner, Richard: The Metabolic Background of Rickets, *New England J. Med.* 216: 879 (May 20) 1937.

21. McCollum, E. V.; Simmonds, N.; Shipley, P. G., and Park, E. A.: Studies on Experimental Rickets: VIII. The Production of Rickets by Diets Low in Phosphorus and Fat-Soluble A, *J. Biol. Chem.* 47: 507 (Aug.) 1921.

22. Sherman, H. C., and Pappenheimer, A. M.: Experimental Rickets in Rats: Diet Producing Rickets in White Rats, and Its Prevention by Addition of an Inorganic Salt, *J. Exper. Med.* 34: 189 (Aug.) 1921.

Black<sup>23</sup> also used high calcium and low phosphorus diets. With a low calcium and low phosphorus diet, Korenchevsky reported that rickets was not obtained, but the same diet with added calcium salts was shown by Goldblatt<sup>24</sup> to cause marked rickets. Thus it became a firmly fixed idea that the rachitogenic properties of a diet depend on the imbalance or disproportion between calcium and phosphorus. Experimental diets of this type, especially the Steenbock and Black No. 2965 (which is chemically similar in composition to the McCollum No. 3143), consist of 76 per cent corn, 20 per cent gluten flour, 3 per cent calcium carbonate and 1 per cent sodium chloride. The calcium content is about 1.2 per cent and the phosphorus about 0.25 per cent. The ratio of calcium to phosphorus is from about 4:1 to 5:1. The results obtained were so satisfactory that these diets became the standard rations for experimental production of rickets and also for the vitamin D assay. The necessity for constant and standard rachitic animals tended to discourage the study of other diets.

More recently, the experimental diets used in the production of rickets were systematically investigated over a wide range of possible variations by Brown and others,<sup>25</sup> Querido<sup>26</sup> and Shohl.<sup>1</sup> This was made possible by the addition of varying amounts of salts of calcium and phosphorus to a basal diet of corn and gluten. The lower limit approximated calcium and phosphorus starvation, and the upper limit, which was obtained by feeding a mixture which contained 20 per cent salt mixture, constituted all the calcium or the phosphorus that the animals would eat. It thus became obvious that not only the ratio of calcium to phosphorus but the absolute amount of each at that ratio determines the rachitogenic properties of the diet. As the ratio of calcium to phosphorus was increased for a given level of phosphorus, rickets became more intense (for low phosphorus diets). As the absolute amounts were diminished, the degree of rickets became more intense, not only for the high calcium-low phosphorus diets and the low calcium-high phosphorus diets but for the low calcium-low phosphorus diets. The last group of diets fell in the zone of calcium to phosphorus ratio of 2:1 to 1:2, which was previously considered to be "normal" or, at least, was not considered to be associated with rickets. In all cases in which the amounts of calcium and phosphorus were sufficient and the disproportion not too great, normal bones were produced and extra vitamin D was not needed.

Because both calcium and phosphorus are necessary to form bone, theoretically any substance which prevents the adequate utilization of either should lead to abnormalities in bones and possibly to rickets. Work on low calcium diets in this regard is lacking. With diets low in phosphorus, not only does a high calcium level prevent adequate utilization of phosphorus but the other metals which form insoluble phosphates (except barium, which is too toxic even for experimental trial)

cause rickets. In this list are beryllium,<sup>27</sup> magnesium,<sup>28</sup> strontium,<sup>29</sup> iron,<sup>30</sup> lead<sup>31</sup> and thallium.<sup>32</sup>

#### RICKETS AND THE ACID-BASE CONTENT OF THE DIET

The metabolism of vitamin D not only is interrelated with calcium and phosphorus but is dependent on the acidity of the diet. It has long been believed that acidity is associated with rickets and alkalinity with tetany. The acidity of the food can be considered both from the point of view of the true acidity, or hydrogen ion concentration, and from the stoichiometric point of view, in which consideration is given to the excess of mineral acids or bases. The true acidity exerts its effect principally on absorption from the intestinal tract. On the acid side the absorption of calcium and phosphorus is facilitated; on the alkaline side the absorption is retarded or inhibited. The potential acidity or alkalinity of a diet depends on the amount of alkaline elements, calcium, magnesium, sodium and potassium, as compared with the amount of acid elements, chlorine, sulfur and phosphorus. Acid foods, meaning those which have an excess of the acid elements, increase the excretion of calcium and phosphorus. Foods which are potentially alkaline tend toward diminished excretion and hence to a greater retention of calcium and phosphorus in the body. The total effect is therefore the result of the true and the potential acidity of the food.

An advance has recently been made by Hamilton and Schwartz,<sup>33</sup> who were able to separate and combine the effects of the diet on absorption and metabolism. By the use of a diet which provided an excess of organic acid and an alkaline ash, they facilitated both absorption and retention of calcium and phosphorus. Diets which were alkaline in reaction and which had an acid ash hindered both the absorption and the retention of calcium and phosphorus. These workers were able to convert rachitogenic diets into normal diets by the addition of organic acids and alkaline ash. They were able also to produce rickets by adding alkalis plus acid ash to normal diets. The former diets contained additions of tartaric acid and sodium tartrate, and the latter, additions of ammonium carbonate and ammonium chloride. Shohl<sup>34</sup> found that these effects were not due entirely to the acid-base properties of the diet but were due also to a specific organic acid effect, in which the tartrates were involved. The citrate ion showed even more pronounced effects. Additions of citric acid plus alkaline residue to rachitogenic diets were found to prevent or cure rickets. This result was obtained not with a single type of diet but with several widely different combinations of calcium and phosphorus.

#### UTILIZATION OF CALCIUM AND PHOSPHORUS

The diets which produce rickets exert a profound influence on the body economy. This is evidenced by

27. Guyatt, B. L.; Kay, H. D., and Branion, H. D.: Beryllium "Rickets," *J. Nutrition* 6: 313 (July) 1933.

28. Park, E. A.: The Etiology of Rickets, *Physiol. Rev.* 3: 106 (Jan.) 1923.

29. Shipley, P. G.; Park, E. A.; McCollum, E. V.; Simmonds, N., and Kinney, E. M.: Studies on Experimental Rickets: XX. The Effects of Strontium Administration on the Histological Structure of the Growing Bones, *Bull. Johns Hopkins Hosp.* 33: 216 (June) 1922.

30. Diamond, L. K., and Brock, J. F.: Rickets in Rats by Iron Feeding, *J. Pediatr.* 4: 442 (April) 1934.

31. Shelling, D. H.: Effect of Dietary Calcium and Phosphorus on Toxicity of Lead in the Rat: Rationale of Phosphate Therapy, *Proc. Soc. Exper. Biol. & Med.* 30: 248 (Nov.) 1932.

32. Rominger, E.; Meyer, Hugo, and Bomskov, C.: Rachitisstudien: die P-Stoffwechselstörung bei der experimentellen Thallium-Rachitis, *Ztschr. f. d. ges. exper. Med.* 78: 272 (Aug.) 1931.

33. Hamilton, Bengt, and Schwartz, Charles: Role of Acidosis and Alkalosis in the Etiology of Rickets, *Am. J. Dis. Child.* 46: 669 (Sept.) 1933. Hamilton, Bengt, and Dewar, M. M.: Effect of Citrate and Tartrate on Experimental Rickets, *Am. J. Dis. Child.* 54: 548 (Sept.) 1937.

34. Shohl, A. T.: The Effect of the Acid-Base Content of the Diet upon the Production and Cure of Rickets with Special Reference to Citrates, *J. Nutrition* 14: 69 (July) 1937.

23. Steenbock, Harry, and Black, A.: Fat-Soluble Vitamins: XXIII. Induction of Growth-Promoting and Calcifying Properties in Fats and Their Unsaponifiable Constituents by Exposure to Light, *J. Biol. Chem.* 64: 263 (June) 1925.

24. Goldblatt, Harry: Experimental Rickets in Rats on a Purified Synthetic Diet Deficient in Phosphorus and Fat-Soluble Organic Factor, *Biochem. J.* 18: 414 (no. 2) 1924.

25. Brown, H. B.; Shohl, A. T.; Chapman, E. E.; Rose, C. S., and Saurwein, E. M.: Rickets in Rats: XIII. The Effect of Various Levels and Ratios of Calcium to Phosphorus in the Diet upon the Production of Rickets, *J. Biol. Chem.* 98: 207 (Oct.) 1932.

26. Querido, Andries: Vitamin D Requirements in Relation to the Ca and P Content of the Diet, *Arch. neér. de physiol.* 20: 487, 1935.

their effect on the blood serum content of calcium and of inorganic phosphate. In general the composition of the blood serum in this respect reflects the composition of the intake. High calcium and low phosphorus rachitogenic diets are associated with a low inorganic phosphate content in the blood serum, a condition similar to that found in human rickets and hence utilized extensively for studies in experimental rickets, especially for vitamin D assays. Similarly, a low calcium and high phosphorus intake is associated with serum calcium values which are at or near the tetany level. In such cases the serum phosphorus is elevated roughly in proportion to the intake.

The absolute amounts as well as the ratio of the calcium to the phosphorus determine the content of these elements in the blood serum. At any ratio of calcium to phosphorus in the food, as the absolute amounts increase the serum calcium and phosphorus, respectively, increase also. When vitamin D is given, the blood serum values tend to become normal, regardless of the type of diet.<sup>35</sup>

The effect of the acid-base content of the diet on the composition of the blood serum seems to be secondary to the ratio and level of calcium and phosphorus of the diet. In selected cases, however, it can be shown that acid ash diets produce a blood picture which tends toward rickets and that alkaline diets tend to cause healing.

It has been a favorite thesis of Freudenberg and György<sup>36</sup> that rickets is associated with an acid metabolism and tetany with an alkaline one. György has relied on determinations of the ammonia in the urine, a reliance which has been seriously questioned by Morris, Ford and Graham.<sup>37</sup> György also has cited early work of Hodgson,<sup>38</sup> who reported that greater doses of sodium bicarbonate were required to make the urine alkaline for rachitic children than for normal children. However, the classic rickets-producing diets are alkaline, and tetany may be induced even with acid phosphates. In neither clinical nor experimental rickets, nor in rachitic tetany, is there a definite alteration of the acid-base equilibrium of the blood.

After material has been absorbed from the intestine, it must take one of three paths. It may be subsequently excreted by the kidneys, it may be reexcreted into the intestine or it may be deposited in the tissues. Thus the amount of material in the stool represents both unabsorbed material and that which has been reexcreted through the intestine. Further, the calcium and phosphorus which are excreted may come either from that ingested or from that which is stored in the body. Calcium is excreted almost wholly by the bowel, about 90 per cent in infants and about 60 per cent in adults, and the major portion of the phosphorus may be excreted either by the kidneys or by the intestine. An excess of calcium causes a reduction in the urinary phosphorus;<sup>39</sup> an excess of phosphorus results in low urinary calcium values.<sup>40</sup> Acid increases the urinary

excretion of calcium and phosphorus,<sup>41</sup> and alkali increases the proportion found in the feces. Parathyroid hormone<sup>42</sup> also causes an increased excretion of calcium and phosphorus in the urine.

In clinical rickets there is an increased excretion of calcium in the feces, and the amount in the urine, normally small, is further decreased. The elimination of phosphorus in the feces is also markedly increased. As was first shown by Schabad,<sup>43</sup> it may exceed the fecal calcium. In infantile rickets both the calcium and the phosphorus balance are subnormal. They may be negative in severe rickets but usually are not.<sup>44</sup>

The effect of the administration of vitamin D is striking. Not only is the blood serum restored to its normal content of calcium and inorganic phosphate, but the metabolism is markedly altered. The amount of calcium and of phosphorus in the feces become reduced, while the amounts in the urine increase. The retention is also increased, so that one sometimes refers to the phenomenon as an increased "net absorption" of calcium and phosphorus.<sup>6</sup>

In experimental rickets the retention values reflect the amounts of calcium and phosphorus in the diet. When vitamin D is given, the blood serum values approach the normal. The absorption is affected similarly to that of infants, but the absolute retentions or the ratio of the calcium retained to the phosphorus may not be restored to normal. High calcium and low phosphorus diets result in high calcium and low phosphorus retentions, vitamin or no vitamin.<sup>17</sup>

**Vitamin D and Parathyroid.**—The relationship of vitamin D and parathyroid hormone has been intensively investigated.<sup>45</sup> It was suspected that their actions were interdependent, but it now seems clear that, although both raise the level of calcium and of phosphorus, the action of each is quite different. Parathyroid acts more specifically on the serum calcium. When it is given for parathyroprivic tetany the serum calcium level is dramatically raised and the phosphate content may be depressed. Only when toxic doses are given is the effect in raising the phosphate level marked. Vitamin D has its most spectacular action in raising a low serum phosphate level in rickets. As previously stated, in toxic doses it increases the calcium content above normal and may depress the phosphate content if it is high. Parathyroid seems to act principally by withdrawal of calcium from the body; vitamin D, by increased absorption, or diminished reexcretion into the bowel. The toxic effect of parathyroid is decalcification; that of vitamin D, hypercalcification.

In rickets, as originally shown by Erdheim and repeatedly confirmed, the parathyroid glands enlarge

41. Shohl, A. T., and Sato, A.: Acid-Base Metabolism: II. Mineral Metabolism, *J. Biol. Chem.* 58:257 (Nov.) 1923.

42. Albright, Fuller; Bauer, Walter; Ropes, M., and Aub, J. C.: Studies of Calcium and Phosphorus Metabolism: IV. The Effect of the Parathyroid Hormone, *J. Clin. Investigation* 7:139 (April) 1929.

43. Schabad, J. A.: Der Phosphorstoffwechsel bei Rachitis, *Arch. f. Kinderh.* 54:83, 1910.

44. Bauer, Walter; Marble, Alexander, and Clafin, Dorothy: Studies on Mode of Action of Irradiated Ergosterol: Its Effect on Calcium, Phosphorus and Nitrogen Metabolism of Normal Individuals, *J. Clin. Investigation* 11:1 (Jan.) 1932. Nicolaysen, Ragnar: Studies on the Mode of Action of Vitamin D: II. The Influence of Vitamin D on the Fecal Output of Endogenous Calcium and Phosphorus in the Rat, *Biochem. J.* 21:107 (Jan.) 1937. III. The Influence of Vitamin D on the Absorption of Calcium and Phosphorus in the Rat, *ibid.* 31:122 (Jan.) 1937. Jones, J. H.; Rapoport, Milton, and Hodes, H. L.: The Effect of Irradiated Ergosterol on the Calcium from the Gastro-Intestinal Tract, *Am. J. M. Sc.* 111:1 (Jan.) 1937. McGowan, J. P.: Further Investigations into the Action, *Biochem. J.* 27:943 (no. 3) 1933. Meyer, H.: Rachitis, *Berlin. Monatsschr. f. Kinderh.* 55:206 (Nov.) 1932.

45. Collip, J. B.; Pugsley, L. I.; Selye, H., and Thomson, D. L.: Observations Concerning the Mechanism of Parathyroid Hormone Action, *Brit. J. Exper. Path.* 15:335 (Dec.) 1934.

35. Park, E. A.; Guy, R. A., and Powers, G. F.: A Proof of the Regulatory Influence of Cod Liver Oil on Calcium and Phosphorus Metabolism, *Am. J. Dis. Child.* 26:103 (Aug.) 1923.

36. Freudenberg, E., and György, Paul: Zur Pathogenese der Tetanie, *Jahrb. f. Kinderh.* 96:5 (Oct.) 1921.

37. Morris, Noah; Ford, F. J., and Graham, Stanley: The Role of Acidosis and Phosphate Retention in Pathogenesis of Rickets and Rachitic Tetany of Infants, *Acta paediat.* 18:50 (Nov.) 1936.

38. Hodgson, Amy: Vitamin Deficiency and Factors in Metabolism Relative to Development of Rickets, *Lancet* 2:945 (Nov. 5) 1921.

39. Orr, W. J.; Holt, L. E., Jr.; Wilkins, L., and Boone, F. H.: The Relation of Calcium and Phosphorus in the Diet to the Absorption of These Elements from the Intestine, *Am. J. Dis. Child.* 28:574 (Nov.) 1924.

40. Telfer, S. V.: Studies in Calcium and Phosphorus Metabolism: III. The Absorption of Calcium and Phosphorus and Their Fixation in the Skeleton, *Quart. J. Med.* 17:245 (April) 1924.



and the cells hypertrophy. This occurs in human beings, rats, rabbits and fowl. Hamilton and Schwartz<sup>46</sup> were able to demonstrate an increased hormone content in the serum of rachitic rabbits. This overactivity of the parathyroid glands is not the cause of rickets but is caused by rickets. The reaction is apparently a defense mechanism of the body to preserve the normal level of serum calcium, so essential to the body economy. As far as rickets is concerned, this hyperfunction of the parathyroids intensifies rather than ameliorates the condition. Shelling, Asher and Jackson,<sup>47</sup> Collip and his co-workers<sup>48</sup> and Waltner<sup>49</sup> found that injection of the hormone exaggerated the rachitic process in rats. Hoag and his associates<sup>50</sup> and Fine and Brown<sup>51</sup> found that it retarded the healing. Such action depends on the type of diet. With a normal diet, not rickets but osteitis fibrosa cystica results. Further, Pappenheimer<sup>52</sup> and Shelling<sup>53</sup> both stated that it is more difficult to produce rickets after removal of the parathyroids.

#### OTHER PHASES OF VITAMIN D METABOLISM

The metabolism of calcium and phosphorus has been discussed in relation to vitamin D. Certainly the metabolism of magnesium and of iron also must be affected. The relation to carbohydrate metabolism has been hinted at in relation to phosphatase. The fat metabolism also is interrelated to the problem. If fat is not utilized, the fatty acids are excreted in the intestine, where they form calcium soaps and thus interfere with the calcium and phosphorus economy.<sup>54</sup> In such conditions as fatty diarrhea and celiac disease, rickets may intervene. Rickets thus caused is amenable to vitamin D therapy.

A great deal has been written on the relation of dental caries to vitamin D, especially by May Mellanby<sup>54</sup> and the English workers. Insofar as the teeth are part of the bony structure, the relation to vitamin D seems straightforward. However, the explanation of the underlying physiologic and pathologic process is still clouded, and the multiplicity of therapies indicates that vitamin D is not the sole factor.

For the pregnant or lactating woman faulty diet and paucity of vitamin D present a real problem. There is no doubt that the offspring may come into the world with poorer reserves of antirachitic factors. The mother and infant show symptoms of calcium and phosphorus deficiency.<sup>55</sup> Congenital tetany and early rickets are found when searched for. The fact that vitamin D is excreted in the milk<sup>56</sup> suggests the possibility of prophylaxis against rickets in the infant through ingestion of vitamin D by the mother.

46. Hamilton, Bengt, and Schwartz, Charles: Rickets and Hyperparathyroidism, *Am. J. Dis. Child.* **46**: 775 (Oct.) 1933.

47. Shelling, D. H.; Asher, D. E., and Jackson, D. A.: Calcium and Phosphorus Studies: Effects of Variations in Dosage of Parathormone and of Calcium and Phosphorus in Diets on Concentrations of Calcium and Inorganic Phosphorus in Serum and on Histology and Chemical Composition of Bones of Rats, *Bull. Johns Hopkins Hosp.* **53**: 345 (Dec.) 1933.

48. Waltner, Karl: Ueber die Funktion der Nebenschilddrüse. *Monatsschr. f. Kinderh.* **40**: 317, 1928.

49. Hoag, L. A.; Rivkin, Helen; Weigle, C. E., and Berliner, Frieda: Effect of Potent Parathyroid Extract on Calcium Balance in Infants, *Am. J. Dis. Child.* **33**: 910 (June) 1927.

50. Fine, J., and Brown, S.: Influence of Parathormone on Bone Regeneration, *New England J. Med.* **198**: 932 (June 21) 1928.

51. Pappenheimer, A. M.: Antirachitic Action of Cod Liver Oil and Irradiated Ergosterol in Parathyroidectomized and Thymectomized Rats, *J. Exper. Med.* **52**: 805 (Dec.) 1930.

52. Shelling, David H.: The Parathyroids in Health and in Disease, St. Louis, C. V. Mosby Company, 1935.

53. Telfer, S. V.: Studies in Calcium and Phosphorus Metabolism: IV. The Influence of Free Fatty Acids in the Intestine on Absorption and Excretion of the Mineral Elements, *Quart. J. Med.* **20**: 1 (Oct.) 1926.

54. Mellanby, May: The Influence of Diet on the Structure of Teeth, *Physiol. Rev.* **8**: 545 (Oct.) 1928.

55. Maslow, H. L.: Tetany in Newborn, *Arch. Pediat.* **50**: 768 (Nov.) 1933.

56. Light, R. F.; Wilson, L. T., and Frey, C. N.: Vitamin D in the Blood and Milk of Cows Fed Irradiated Yeast, *J. Nutrition* **8**: 105 (July) 1934.

Renal rickets is associated with damaged kidney and upset of the phosphate excretion, often complicated by acidosis.<sup>57</sup>

Finally, intractable rickets has been reported, for which the therapeutic effect of vitamin D could be obtained only when the dose was multiplied many thousand times. These are but a few of the problems the solution of which lies in the future.

#### SUMMARY

To summarize known facts, it may be stated that the study of the physiology and pathology of vitamin D has advanced to the point where it is recognized that:

The metabolism of vitamin D is closely related to the composition of the diet, especially the content of calcium and of phosphorus and the acid-base value.

The metabolism of vitamin D is related to the parathyroid hormone, phosphatase and other factors.

The main action of vitamin D is to increase the absorption of calcium and phosphorus or to diminish their intestinal excretion.

When the concentration of  $\text{Ca}^{++}$  and  $(\text{PO}_4)^{---}$  in the body fluid surrounding the degenerating cartilage cell as measured by the state in the blood is sufficiently great, deposition of salts in growing bone occurs.

## Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. HOWARD A. CARTER, Secretary.

#### AUDI-EAR NOT ACCEPTABLE

Manufacturer: American Earphone Company, 10 East Forty-Third Street, New York.

The Audi-Ear is a transparent reflector placed next to the ear. The instrument is recommended for the moderately hard of hearing. It operates without a battery. The unit is approximately  $1\frac{3}{4}$  inches long and one-half inch thick. A molded earpiece may be used with the device to hold it firm against the ear, in which case a head band is not necessary. It may be carried in one's pocket when not in use, as it comes in a carrying case which protects it against breaking. A single Audi-Ear may be used in either the right or the left ear. Two of these devices may be used only when the hearing impairment in the two ears is similar. The firm states that the unit may be used on trial for ten days and if unsatisfactory the cost price will be refunded except for a slight fee for trial.

The unit was investigated under conditions acceptable to the Council. Two patients were tested. One had an approximately uniform hearing loss of 30 decibels from 64 to 8,192 cycles, and the other had a uniform loss of approximately 45 decibels over the same frequency range. The former had normal bone conduction, while the bone conduction of the latter was slightly below normal. Only the hard-of-hearing person with the 30 decibel loss obtained any value from the use of this device. The improvement was noted as a slightly more natural quality of speech rather than an increase in loudness or intelligibility. Apparently it is of value to only a very small percentage of hard-of-hearing persons, those with slight losses who have more loss for the high frequencies than the low. It is roughly equivalent to cupping the hand behind the ear.

In the light of available evidence, the Audi-Ear Hearing Aid is of value to relatively few hard-of-hearing persons. The advertising matter contains misleading statements, such as "Does for your hearing what eye-glasses do for your sight." Hard-of-hearing persons may purchase the unit believing that it will be of real benefit. Influenced by the exaggerated claims made in the advertising matter, the public may be misled as to its actual value. The Council on Physical Therapy voted not to accept the instrument in the interest of the welfare of the public.

57. Mitchell, A. G.: A Consideration of the Pathogenesis of Renal Rickets, *Acta paediat.* **11**: 352, 1930.

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, AUGUST 13, 1938

## THE COLUMNISTS COMMENT ON THE ARNOLD PRONUNCIAMENTO

Elsewhere in this issue (p. 623) appear editorials published in various newspapers relative to the pronunciamento of Thurman Arnold, who proposes to determine whether or not the American Medical Association is a monopoly. Seldom has an action taken by the Department of Justice aroused the public interest and attention developed by this action. In addition to the editorials which have appeared in the newspapers, practically every one of the columnists syndicated in newspapers throughout the country has had something to say on the subject.

Paul Mallon, widely circulated by King Features Syndicate, in his column *News Behind the News*, after describing the case and stating that if the American Medical Association is a monopoly so is the American Bar Association, says that this suit—

would simply mean the Justice Department is misnamed and has become instead a prosecution department to enforce, not alone the law, but social and economic theories.

Mr. Mallon also indicated that application of this principle would mean that newspaper correspondents might object because some of them cannot get into the press galleries of Congress, and the attendance on the President's press conferences is also strictly limited. Those who can get in have a great commercial advantage over those who cannot.

Mr. Hugh Johnson feels that the attitude of the American Medical Association in resisting cooperatives is "heading straight for the dog-house of public disfavor" but he is inclined to think that the Department of Justice has not picked out the way—

to bring about the desired end. . . . It is a slick, novel and sort of smart-aleck use of a 40-year-old law for a purpose which nobody ever before believed that it was intended.

David Lawrence, widely syndicated, feels that—

the doctors have a society which is as much entitled to protection under the Wagner Relations Act as any other association of service workers.

After explaining his view that the Department of Justice has intervened principally to help the Group Health Association, Inc., Mr. Lawrence says,

The attempt to drag the antitrust laws into a controversy over what is or is not proper medical care is a piece of amazing political stupidity, but it is another example of how the zealots in the administration, with the full approval of President Roosevelt, are manipulating the laws of the United States to gain the goals of their so-called social experiments.

Mrs. Walter Ferguson, after explaining the nature of the controversy in Washington, says:

The average layman holds himself aloof from the controversy about his welfare now raging between the federal government and the American Medical Association.

If he is a middle-class citizen, he considers himself a martyr and is fond of saying that only the very rich and the very poor receive any consideration from doctors—although I doubt whether he would be willing to exchange places with the poor.

If we are honest, we must admit that our attitude toward the doctor has always been irritable and without consistency. We're ready to spend money on everything except our health. Most families will make any sacrifice to buy an automobile on the instalment plan, while they feel much aggrieved if they have to invest monthly sums to pay for medical attention which may have kept one of them out of the grave.

In the *Baltimore Sun* Mr. Henry L. Mencken says:

A defect common to all the plans so far proposed is that they are confined to employed persons and offer no aid to the unemployed. The latter are thus thrown on the free clinics, which are mainly manned by doctors who get nothing for their work.

This puts a very heavy burden on the medical profession, and there are doctors who begin to find it almost intolerable. Proposals have been made that the federal government offer them some remuneration, and no doubt this will be done as soon as the New Deal wizards can get around to it.

But whether the doctors will accept remains to be seen. Most of them are unalterably opposed to going on the public pay roll and so submitting their work and their fortunes to the will and whim of politicians.

Their opposition is hardly likely to be lessened by the fact that all the Communist organs have begun a violent campaign against them, denouncing them as sharks and scoundrels. Or by the fact that the New Deal has now joined in.

A newspaper columnist named Jay Franklin, who has repeatedly attacked the American Medical Association since he first appeared on the newspaper horizon and who endeavors to identify the Editor of *THE JOURNAL* as personally responsible for every policy of the American Medical Association, devotes most of his discussion to a further attack. It is impossible to find anything in his column sufficiently sensible to merit quotation. He writes as though authoritatively without having made the slightest apparent effort to find out the facts. In contrast, Bugs Baer, in a few succinct sentences, puts his finger squarely on the political motives involved in the attempt to make medical care the issue in future political campaigns:

The doctors don't approve of the federal health plan subject to a prescription by thirty-six states. A Democratic pharmacist deciphering a Republican doctor's diagnosis might mix in too much filibuster and not enough relief.

Health shouldn't be subject to politics. And when we're sick we don't want the opposition voting on it.

The insurance companies are nonpartisan. They pay off like a slot machine either way.

## RESISTANCE TO TUBERCULOSIS

Resistance to tuberculosis decreases with age and older animals are relatively susceptible to this infection is the surprising conclusion of Smithburn<sup>1</sup> of the Rockefeller Institute, from his study of experimental tuberculosis in guinea pigs.

Statistical and experimental evidence led earlier immunologists to the generalization that resistance to all infectious diseases increases with age, reaching its maximum in early adult life. After the thirty-fifth year a gradual decrease in antimicrobial defense was postulated.

Some doubt as to the universality of this law may arise from study of the relative susceptibilities of young and adult rabbits to streptococcus and staphylococcus filtrates. Up to the age of 4 months newborn rabbits can be injected intravenously with presumably multi-lethal doses of staphylococcus toxin without appreciable toxic symptoms.<sup>2</sup> Adult rabbits are killed within twenty-four hours by a fraction of the same dose per unit of body weight. This youthful tolerance to staphylo toxin is not serologically transferable and is conceivably due to the greater "growth vigor" of juvenile tissue cells. Other theories, of course, have been proposed. That there is a similar juvenile tolerance to staphylo toxin and streptotoxin in man is shown by the failure of children to react to endermic tests with these toxins,<sup>3</sup> most adult skins being highly reactive.

In order to test the relative susceptibility of different age groups to tuberculosis, Smithburn inoculated groups of normal guinea pigs of different sizes with arbitrary doses of highly virulent and moderately virulent human and bovine strains of *Mycobacterium tuberculosis*. The inoculations were made intracerebrally. Each animal was allowed to succumb to the infection, and the mean survival time per group was thus determined. In one series, for example, a group of five elderly guinea pigs (900 Gm., three females, two males), five middle-aged animals (450 Gm.) and five young guinea pigs (150 Gm.) were each inoculated intracerebrally with 0.00001 mg. of a highly virulent human strain of the tubercle bacillus. The mean survival time for the elderly group was 23.8 days, for the middle aged group 27.6 days, and for the juvenile group 35.8 days.

When subjected to statistical analysis, these differences are significant, particularly when reduced to the basis of dose per unit of body weight. Thus the young animals received on an average 7.7 times the calculated dose per kilogram of body weight given to the oldest group and 3.3 times the middle aged dose. Smithburn concluded from his evidence that resistance to tuber-

culosis "as measured by survival time of guinea pigs after intracerebral inoculation" decreases with age, young animals being approximately ten times more tolerant than elderly controls. Whether or not this juvenile tolerance to tuberculosis occurs in human epidemiology was not discussed.

## THE DETERMINATION OF CALCIUM REQUIREMENTS

Henry C. Sherman<sup>1</sup> of Columbia University holds that the American diet is frequently deficient in calcium and that a calcium deficiency may be avoided by regulating the diet to include more foods with ample calcium content. Although the Sherman standards for optimum daily calcium intake are widely accepted, investigators are not agreed as to minimum calcium requirements. One difficulty in determining the basic requirements for such elements as calcium, iron and phosphorus is that they are not accurately indicated by the rate of retention in the body at any given time.

Fairbanks and Mitchell,<sup>2</sup> who studied factors affecting calcium retention in rats, point out that the highly variable retention of calcium reported in children may be due to the variable condition of their skeletal tissues with respect to calcium storage. This has been emphasized previously, but it appears to be a point that has been overlooked in many discussions of the calcium needs of the body. Boldt, Brahm and Andresen,<sup>3</sup> for example, showed that previous depletion of the calcium stores will accelerate its storage.

Fairbanks and Mitchell undertook a study of the rate of retention of calcium during periods of experimental feeding of rats on different calcium intakes. They found that the extent to which the skeleton is saturated with calcium determines the rate of calcium retention, low saturation being associated with subsequent high retention of calcium. Calcium retentions observed under conditions of adequate nutrition are an index of calcium requirements only when the calcium stores have been saturated by appropriate prefeeding. In evaluating experiments in which this precaution has not been taken, more significance can be attached to the lower rates of calcium retention than to the higher as measures of actual requirements. This is in accord with conservatively accepted information concerning the nutritional needs of calcium; namely, that medication with calcium is not indicated unless there is a prolonged dietary deficiency.

The University of Illinois investigators conclude that the actual calcium content of growing rats is dependent

1. Sherman, H. C.: *Food and Health*, New York, Macmillan Company, 1934.

2. Fairbanks, B. W., and Mitchell, H. II.: *The Relation Between Calcium Retention and the Store of Calcium in the Body, with Particular Reference to the Determination of Calcium Requirements*, *J. Nutrition* 11: 551 (June) 1936.

3. Boldt, Franziska; Brahm, Carl, and Andresen, Gertrud: *Langfristige Mineralstoffuntersuchungen an zweigesunden, Säuglingen bei mineralstoffarmer und -reicher Kost*, *Arch. f. Kinderh.* 87: 277 (No. 4) 1929.

1. Smithburn, K. C.: *Proc. Soc. Exper. Biol. & Med.* 38: 575 (May) 1938.

2. Parrish, H. J., and Okell, C. C.: *J. Path. & Bact.* 33: 527 (July) 1930. Trask, J. D.: *J. Immunol.* 22: 41 (Jan.) 1932. Burky, E. L.: *J. Allergy* 3: 438 (July) 1932.

3. Cooke, Jean: *Proc. Soc. Exper. Biol. & Med.* 24: 314 (Jan.) 1927.

on the calcium content of the diet, if it contains a percentage of calcium inadequate for maximum storage, and on the rate of growth, which is dependent in turn largely on the rate of food consumption. The first relation is a direct one, the latter an inverse one, rapid gains being associated with low calcium content. Furthermore, the commonly accepted belief that females contain higher percentages of calcium in their bodies and in their bones than males of the same age seems to be entirely referable to the slower growth. Finally, since the calcium content of growing rats and the extent of calcification of their bones are dependent on the amount of food consumed as well as on its mineral content, control over the total food intake is essential for accurate interpretation of experimental results.

### Current Comment

#### THE RED TAPE BEGINS TO UNWIND!

If any one is in doubt as to what happens under state medicine, the following example should be convincing: In the case of a woman in the state of New York who was ill, attention was given by a local physician, who then notified the relief official that prolonged medical care would be required. The case supervisor for the public welfare official then sent the following letter:

We are enclosing forms which are to be forwarded to the state department where prolonged medical care is needed.

We are asked to send a letter from the doctor with these forms giving a complete medical history of the patient which will include the date of onset of illness, the diagnostic procedure used and any laboratory findings. *The name, strength and quantity of the material used for injections will be reviewed by a state physician.*

The red tape begins to unwind and before the spool runs out all of medical practice may be wrapped in its meshes.

#### OXFORD HONORS HARVEY CUSHING

The University of Oxford in July conferred on Dr. Harvey Cushing of New Haven the honorary degree of doctor of science. The event was more than academic, for Dr. Cushing, the *Lancet*<sup>1</sup> says, also received expressions of affection and respect that few other men could command. The famous surgeon was described as a man who had removed more than 2,000 brain tumors, as a great baseball player who had taken up surgery, as an innovator in technic who performed not only with scalpel but with the pen, as the biographer of his friend William Osler, and as a benefactor of the wounded in France in the World War. At a luncheon given by the vice chancellor before the ceremony the guests included Sir Almroth Wright, Sir Richard Livingstone, Dr. E. H. Cushing, a nephew, Drs. Clovis Vincent and Thierry de Martel of Paris, Dr. Arnold Klebs, Professor Bastianelli of Rome, three former surgeons in chief of the Peter Bent Brigham Hospital

in Boston, where Dr. Cushing did much of his surgical work, and former pupils who now hold positions in Brussels, Louvain, Amsterdam, Manchester, Edinburgh, Leeds, London, Oxford and Newcastle-on-Tyne. A distinguished group attended a party also at the Nuffield Institute. On Sunday morning Dr. Cushing gave a clinic demonstrating a case of pituitary basophilism. It was an international occasion. In presenting him for the honorary degree, the orator said:

Ecce chirurgus primarius, qui fausto exitu plus bis millies, ut verbis Emilianis utar, tumescens ferro "cere-comminuit brum." Medicis patre, avo, proavo prognatus et in Universitate Yalensi cum Doctoris gradum tum pilae lusoris litteram adeptus, postquam in Europa quoque disciplinam suam secutus est, domum reversus difficillimam cerebri secundi artem—id quod ipse olim chirurgiae Symplegadas nominavit—aegrotantibus maxime optulair verbis arguebat, factis probavit. Quin ipse in hac arte mirum quantum proventus qui tardius agat melius agere demonstravit. Multum huiusmodi remediis prodesse vim electricam credebatur; naturae fortasse medendi facultati diffidebat, nihil certe fortunae permittebat. Idem per viginti annos in Universitatibus Yalensi et harvardiana Professor quod ipse didicerat, discipulos docuit, quorum complures hodie famam sibi maximam vindicaverunt. Nec scalpello tantum hic usus est sed etiam stilo. Nonne de nervis, de cerebri textura, de glandula pituitaria τέχνην ἐχοντι permulta scripsit? nonne nobis *Idiōtᾱis* amici sui Willelmi Osler monumentum exegit praeclarissimum? Nunc, cum rude donatus ad nos hospes advenit, ut viro honoribus prius cumulato nos quoque tributum nostrum offeramus, praesento vobis chirurgum eminentissimum, Harvey Cushing, illustrissimi ordinis de Balneo comitem, ut admittatur honoris causa ad gradum Doctoris in scientia.

#### MAJOR AND MINOR SURGERY

In two recent communications, Hubert A. Royster makes a plea that the term "minor surgery" be eliminated from our nomenclature because of possible implications. He advances the argument that the labeling of certain procedures as minor may mislead an intern or a general practitioner into believing that any condition requiring surgical intervention can be regarded as minor. Only one of 104 surgeons whom he consulted believed the division of surgery into major or minor is justified. The principal objection to the term, it appears, is that it is vague and ill defined. There exist no definite criteria by which to designate any one procedure as minor or major. What appears to be a simple procedure may develop into the most complicated one. What is a minor operation in the hands of a skilful surgeon may prove a major one in the hands of the unskilled surgeon. Such criteria as time required to perform an operation, the mortality, the skill required, the question of anesthesia, the question of whether it can be performed in the office or requires hospitalization are all variables. The suggested substitutes for the term minor surgery, such as office surgery, ambulant surgery or dispensary surgery, are hardly an improvement. Royster argues that all surgery is based on the same fundamental principles and is therefore not divisible. In no other field of medicine does a similar division into major and minor procedures exist. Actually the term minor surgery has largely disappeared from the curriculums of our leading medical schools.

1. Dr. Cushing at Oxford, *Lancet* 2:226 (July 23) 1938.

# ORGANIZATION SECTION

## EDITORIAL COMMENT ON THE ARNOLD PRONUNCIAMENTO

### THE SOFT IMPEACHMENT

*New York Herald Tribune, August 2*

The nation is just getting itself adjusted to Mr. Thurman Arnold's novel method of antitrust prosecution by what might be called the soft impeachment. His recent announcement that he was setting out to enjoin the motion picture companies as violators of the law, but was doing so in only the most constructive and friendliest possible spirit, had much to recommend it; here at last, it seemed, was a way through which the antitrust laws might be made into really serviceable instruments of rational industrial regulation. But when Mr. Arnold suddenly extends the same polite constructivity into the nonindustrial problem of group medicine one is not, in the first moment of astonishment, quite so sure.

The implications of the proceeding are so remarkable as rather to overshadow the specific allegations of sabotage against the district medical society. To begin with, Mr. Arnold can scarcely have much confidence that a criminal prosecution would stick in the courts. There are various decisions to the effect that the prohibited restraint of "trade or commerce" must apply to goods or commodities, while the Clayton act specifically excludes the "labor of a human being" as an article of commerce. Surely, a doctor's laborious services could not easily be brought within the scope of the antitrust laws. But the Arnold method is not aimed at a court battle; it proposes rather to extort a consent decree without one.

The consent decree has been used before now to enforce, through the mere threat of prosecution, an extent of governmental regulation which the prosecution itself might fail to sustain. That aspect of Mr. Arnold's sweet reasonableness might not matter so much in the proper field of antitrust law, where there are always plenty of capable opposing counsel; but extended into the problems of medical practice it seems fraught with ominous possibilities.

And there are other peculiar things about this proposal to settle the complex social issues centering around medical care by the kindly intervention of the Department of Justice, with criminal charges and a grand jury investigation. Mr. Arnold himself notes, under the head of "economic results to be expected" that prosecution in the nation's capital will ensure "adequate publicity." (It could ensure little else; for, since medicine, if "commerce" at all, is certainly not interstate commerce, the federal law would operate only in the District of Columbia.) At a moment when the New Deal seems pretty hard put to it for popular issues next year and is clearly working up the health insurance question as a possible means of filling the gap, this device for showering "adequate publicity" upon the matter has an unpleasantly political connotation.

The Department of Justice, for all its excellences, is clearly not the appropriate agency for regulating American medicine. And if its new policy under Mr. Arnold is going to be bent to the uses of political stratagem, it will cease to be an appropriate agency for regulating anything else.

### NEW DEAL BUFFOONERY

*Troy, N. Y., Times Record, August 2*

There is something excruciatingly funny about the antics of New Dealers when somebody challenges their benevolent tyranny. In their own estimation, from the President down, they seem to believe honestly that they are the anointed of the Eternal, infallible in every detail, and therefore entitled to ignore law, courts, custom and all other conventions that civilization erects for its own protection. If the courts are in the way, pack them. If laws oppose a plan, scrap them. If Con-

gress refuses to act on such laws, twist them. If men question New Deal objectives, denounce them.

So the men who are directing the plastic intelligence of the President along radical lines toward collectivism have decided that cooperative medicine, at first voluntary and at last compulsory, must be introduced into the United States while the going is good. The American Medical Association does not approve it. In this attitude it has most of the nation behind it. So the A. M. A. decides to bar from its membership those who favor cooperative medicine—which it certainly has a right to do. Its position is precisely the same as any club which bars this or that group from its privileges; for a club is a voluntary association.

But the New Deal bunch are angry. So the word has gone out that the A. M. A. must be attacked by law. An injunction will be sought compelling it to admit to its membership the New Deal gang of doctors. In short, New Dealism proposes to force its way even into voluntary associations. The next step will be to insist that all newspapers publish all its lying hand-outs and be enjoined wherever they refuse.

There is no law for such compulsory breaking down of social preferences. Censorship cannot go thus far. The New Deal proposal is silly and tyrannous. It has in it not a single ingredient of honest Americanism. It is purely Russian—as are many of the New Dealers. The courts are not yet packed by the Roosevelt régime and there is not a chance that any such processes will win. But that such efforts should be made ought to be evidence enough of the program of repression and dictation which Washington intends to carry out if it can get the power into its hands.

### NEW DEAL MEDICAL BLUFF

*Indianapolis Star, August 2*

The Justice Department apparently is acting under New Deal orders to use threats and coercion on the organized medical profession in an effort to further the schemes of so-called state medicine. The department has accused the medical association of alleged illegal activities against cooperative groups formed to lower the cost of medical care. One of its assistants said a preliminary investigation indicated possible violation of antitrust laws.

An honest difference of opinion exists among members of the medical profession, but nothing to date has justified the attempted interference of government agents, particularly on antitrust claims. Organized medical societies should be able to exercise majority rule in determination of policies deemed necessary for public and professional welfare. Some physicians affiliated with the cooperatives are said to have been excluded from Washington Hospitals. That reported condition in the District of Columbia does not justify blanket charges applying to all the profession.

The government's charges evidently were designed to intimidate the medical profession into acceptance of the socialistic spending contemplated by the New Deal health program. The President's advisory committee recently recommended expenditure of hundreds of millions on a national health program, which would extend governmental paternalism, impose an additional burden on the taxpayers and add to the list of residents who assume with some reason that the government will supply every need for the rest of their lives. State medicine makes almost inevitable a bogging down of professional standards which have contributed to the high plane of scientific progress.

It is true that many cannot pay for medical care. State and local clinics provide aid, much charity work is performed throughout the country and both medical and dental groups are sponsoring time-payment plans. Persons needing professional



attention usually get it, regardless of financial circumstances. The socialistic schemes fostered at Washington, however, are training too many to believe they can become permanent wards of the taxpayers.

### A CHARGE OF MONOPOLY

*Philadelphia Public Ledger*, August 2

Lately there have been several indications that certain federal authorities regard the representatives of organized medicine as enemies. Though admitting the "absence of moral turpitude," the Department of Justice is bringing criminal proceedings against the American Medical Association and the District of Columbia Medical Society, intending to prove that these organizations have violated the antitrust laws by interfering with the workings of a health association of government employees.

The medical groups, it is charged, have threatened expulsion and other disciplines for physicians supplying their services to the Group Health Association, Ltd. It is implied that by doing so they are endeavoring to maintain a monopoly in medicine.

But the long-established rules and policies of organized medicine are mainly designed to defend its standards and codes of ethics. The medical profession is self-governing. And this, perhaps, is what the New Deal Administration doesn't like about the medical men. They are rebels against the policy of benevolent regimentation. They believe they can mind their own business better than Washington. By invoking the antitrust laws the government has gone a long way for a weapon against them.

### IS THERE A MEDICAL TRUST?

*Philadelphia Record*, August 2

The government is starting antitrust action against the American Medical Association, just as if it were a widget manufacturing corporation.

Treating the A. M. A. as if it were just another business will probably offend some of the nation's eminent and distinguished doctors.

But they have brought it on themselves.

Medicine is not a business. It is a science and an art, a great calling set apart from the humdrum round of ordinary activities. But the conservative A. M. A. leadership has been doing its best to act like the board of directors of a watch-fob trust intent on controlling the market.

They have fought "competition" as bitterly as any tight little trade organization. Not the competition of quacks and charlatans (in fighting them the A. M. A. has done brilliant and useful work), but the competition of regularly licensed physicians who have endeavored to work out practical methods of group medical care.

The Department of Justice is proceeding in the case of the Group Health Association of Washington. This is an organization formed by 2,500 government employees who sought to protect themselves against the disastrous expense of major illnesses by combining, hiring doctors, setting up a clinic and meeting expenses by small monthly premiums.

Insurance, no more, no less.

The answer of organized medicine has been the bitterest hostility. Hostility based not on any quarrel with the methods of treatment or the qualifications of the doctors, but on the methods of payment alone—hostility based on the fear of competition.

Doctors working for the group have been threatened with expulsion from the local medical societies affiliated with the A. M. A. One doctor has been expelled. The facilities of hospitals (even in emergency cases) have been denied to doctors connected with the group plan. Every effort has been made to hurl these doctors into the outer darkness.

The Department of Justice, through Assistant United States Attorney Thurman Arnold, has started an investigation. It offers to drop it if the A. M. A. and the local medical society accept a consent decree. Arnold carefully points out that he is not defending group practice but merely trying to "prevent artificial impediments by organized groups" against any legal

efforts to lower the appalling costs of medical care—costs completely beyond the reach of the average worker.

We think this investigation is vital. We think the A. M. A., instead of doing a scientific job of studying group medical practice on its own, has blindly chosen to isolate itself from the major currents of contemporary medical thought. It has disheartened many physicians, as witness the growing rebellions against the A. M. A. leadership in the A. M. A.'s own ranks.

Despite the A. M. A.'s opposition, the drive for health insurance and group practice continues. The Committee of 430, the rebel group in the A. M. A., includes some of the most famous names in medicine. Entire state organizations, such as the California Medical Association, have revolted and plumped for health insurance. On the West Coast the famous Ross-Loos Clinic, offering complete medical care for \$2 per month per family, now has 50,000 members, fifty-five doctors, a five story building, an ambulance fleet.

We hope the A. M. A. comes to its senses. It should be the leader in improving the economics of medicine as it has been the leader in furthering the science of medicine. It has a splendid opportunity. If it is wise, it can retain a position of control as the years bring their inevitable changes.

If it is short sighted, it, and medicine and the public, will be the losers in the end. We don't suggest that the A. M. A. endorse group practice. We urge only that it permit, without hindrance, those experiments which alone can settle the question.

### APPLICATION OF THE ANTITRUST LAW TO REGULATION OF MEDICAL PRACTICE

*Arizona Republic*, August 2

What is this sacred thing, the Group Health Association, that it may not be flouted with impunity? Is it not a long step in the direction of complete regimentation which now seems to have been the aim of the brain trust at the beginning six years ago and, perhaps, would now be well under way but for the intervention of the Supreme Court against NRA? But in many and devious ways that objective is still being approached.

If a membership list of the Group Health Association were obtainable, we think we would find it was largely made up of adherents of the New Deal.

Steps in the name of the Group Health Association have already been put under way against the American Medical Association and the District of Columbia Medical Society as violators of the federal antitrust law. Perhaps if it could be shown that these organizations had encouraged their members to agree upon the fees to be charged by the profession, and that as a result of such encouragement uniform and exorbitant fees prevailed, an action for violation of the Sherman antitrust act might lie.

But as we understand that is not the gravamen. Then what have the intended defendants done to call down upon them the wrath of the New Deal? They have been guilty of the sacrilegious act of speaking disrespectfully of the Group Health Association. They have signified that they want nothing of this association. They counsel the dissociation of their members from the group health physicians in the matter of consultation and hospitalization and other relations which are more or less private and personal. In short, they regard the health group idea as a form of heresy which should not be encouraged. That is, the head and front of the offending of the American Medical Association, a revolt against the New Deal.

The proposed action against the American Medical Association and the District of Columbia Society is quite similar to the proceedings of the National Labor Relations Board, whose interpretations of the Wagner Act are held to be sacred and not subject to questioning. It has thus become a crime to think evil of the rulings of the board.

It is the professed aim of the health group to provide medical and surgical aid for all who are in need of it. We have been making a gradual approach to that aim for many years, but the health group wants it done now, instantaneously. It is in that respect similar to nearly all New Deal projects, lacking in practicality.

We may suspect that the health group is more solicitous for the well-being of a class of physicians who for one reason or

another have fallen short of professional success, than they are that none should be deprived of medical care. For this they would regiment the practice of medicine and establish it on a lower level than that to which it has been brought mainly through the efforts of the men who are now more vigorously opposing regimentation.

If it should happen as a result the action threatened by the department of justice that the practice of medicine should be shorn of its independence and freedom and all practitioners should be reduced as nearly as possible to a common level, it would be a sad day for the country. In their wildest dreams the most insane of radical socialists nearly fifty years ago when the Sherman law was enacted could not have supposed that it could ever be applied to such a scheme for regimentation.

They might, and no doubt did, have in mind complete socialization, but they could not have imagined that it would ever be reached through an antitrust law. Certainly congress never contemplated such a use of the Sherman act.

## A NEW USE FOR ANTITRUST LAWS

*Philadelphia Inquirer, August 2*

Public interest in the antitrust suit which the Department of Justice is now bringing against the District of Columbia Medical Society and the American Medical Association will not be confined to Washington. The widespread adoption of plans for group hospitalization and medical care will focus national attention on this unprecedented action.

Thurman W. Arnold, Assistant Attorney General, charges the organizations of physicians with violating the antitrust laws in attempting to prevent the functioning of a local group health association composed of government employees. Specifically the medical societies are accused of threatening expulsion of their own members who accept employment from the health group and also their removal from staffs of affiliated hospitals.

This alleged procedure is termed by Mr. Arnold an illegal boycott of health group doctors. He charges that the associations are endeavoring to set up a virtual monopoly of the community's medical services.

In proceeding against professional nonprofit organizations, which are not concerned with prices or commodities and in the ordinary sense are incapable of operating in restraint of trade, the Department of Justice has entered a field commonly regarded as outside the scope of antitrust laws.

The Washington plan that has encountered opposition from medical societies differs from the group hospitalization plan recently adopted for Philadelphia with the cordial cooperation of organized medicine. In Washington a group has retained its own staff of physicians and operates its own clinic. Under the Philadelphia plan subscribers take out insurance against the cost of hospital accommodations and treatment.

Whatever the outcome in Washington, Philadelphia has reason to congratulate itself on the agreement recently concluded between the Associated Hospital Service and the County Medical Society that will mean so much to the health of this community.

## A MEDICAL CONTROVERSY

*Boston Post, August 2*

The action of the Department of Justice in charging the American Medical Association with monopolistic practices in connection with the Washington Group Health Association is, indeed, a radical departure from accustomed procedure.

The Group Health Association is a mutual organization of government employees. It provides all medical care necessary for its members by payment of a small membership fee.

Doctors are hired by the year. They earn their complete living in this way. As far as can be ascertained, the plan is working very well for doctors and patients.

Now it is alleged that the A. M. A. and its affiliate, the District of Columbia Medical Society, is attempting to prevent the success of the association by using the following methods:

The first is threatening expulsion of doctors from the A. M. A. for working for the association. The second is

threatening expulsion from the society of doctors who consult with the association. The third is threatening expulsion from Washington Hospitals of the association staff doctors.

It can be seen that the methods charged are underhanded, and, if proven, monopolistic indeed.

There is no question that there is a large element in the medical profession which opposes departure from the time-honored individualistic conception of medical practice. And also there is no question that, in this day of government interference in every walk of life, a socially minded government wants to put over a sweeping plan of nationalistic medicine, as it has put over farm plans, soil plans, flood plans, unemployment plans and electric power plans.

But before we make up our minds that the present action has dragged a raw situation into the light, in which the American Medical Association is attempting to hold up the public for high fees, it is well to scan the record.

The association for a number of years has protected the public against the quacks which sprout like fungi in the broad field of medicine.

There is no subject that the general public knows less about than bodily health.

Illegal practitioners have been winnowed down to a minimum; medical schools of the racket variety have been put out of business; standards of state medical examinations have been raised and fake cures and hospitals have been exposed.

The general standard of medicine is higher in this country than anywhere else on earth. And it has been the voluntary membership of the American Medical Association, a free and unsupervised society, which has done it.

Of course, there has been much complaint against the mandatory methods of the Association, exercised against individuals and in legislative halls. But the ultimate result of it all has been beneficial.

Consequently, the government's present move should not be prejudged until the facts are known.

## CLUB FOR MEDICAL 'TRADE'

*Philadelphia Evening Bulletin, August 2*

Anticipation that there would be something novel and spectacular in antitrust enforcement under Assistant Attorney General Thurman Arnold has been borne out. The proceedings just initiated against the American Medical Association and the District of Columbia Medical Society, intended to lead up to a Grand Jury investigation of the opposition to group medicine from the antitrust point of view, is a coup almost deserving the overworked adjective sensational.

The allegations charge an illegal boycott carried out through threats of exclusion from the District Medical Society, and the actual exclusion from Washington hospitals of physicians on the staff of the Group Health Association, Inc., an organization of government employees to provide themselves with prepaid medical care.

The Sherman Act and other antitrust legislation were expressly stated to be intended to prevent combinations in restraint of trade and commerce among the several states or with foreign nations. The "trust" aimed at was nothing vague or indefinite in the minds of those who pushed this legislation. The popular idea was well embodied in a noted cartoonist's conception of a puffy, bloated plutocrat in dollar-mark checked attire. There was accordingly considerable indignation when in the famous Danbury hatters case the Sherman Act was applied to a labor boycott. The Clayton Act of 1914 made the declaration that "the labor of a human being is not a commodity or article of commerce," and exempted from the operation of the antitrust statutes nonprofit labor and agricultural organizations not having capital stock.

Logically, professional skill and attainments would seem to be equally out of the class of commodities with which the antitrust statutes concern themselves. Of course, as there is no specific exemption in their case, it may be found that the law against restraint of trade applies to the practice of the medical profession. Mr. Arnold contends the law applies to "services" as well as goods.

The Arnold move will probably be widely popular with those who believe that opposition to group medicine and group hospitalization is short sighted on the part of the medical profession, and that if the war on group medicine in the District went to the length charged by the Attorney General the bounds of legitimate self defense were exceeded. But the fairness of the use of this particular club is open to question, especially as long as there are awaiting attention so many charges of violation of the antitrust laws by combinations they were supposedly intended primarily to cover. Such prosecutions would be more prosaic, but they come closer to the intent of the law as commonly understood.

### MEDICAL MONOPOLY

*Indianapolis News, August 2*

An amazing interpretation of the federal antitrust laws is implied in the announcement of the United States department of justice that it is preparing to bring suits against the American Medical Association and other medical societies for violation of the antitrust laws. Coming so soon after the national health conference at Washington, at which differences of opinion between the American Medical Association and the federal administration were expressed, the inference is that the administration has resorted to the antitrust law suit device to bring pressure to bear upon the organized medical profession for approval of the administration public health plan. An assistant attorney general said in a statement accompanying announcement of the suits that the department would consider a consent decree in event that the defendants in the suits decide upon voluntary cooperation. This means, in effect, that the department will not prosecute if the defendants say that they will desist from alleged violation of the antitrust law.

The attorney general's office alleges, in the suit singled out for a test, that the American Medical Association and the Medical Society of the District of Columbia have attempted to prevent the functioning of the Group Health Association, Inc., of the District of Columbia. This is an organization of about 2,500 government employees. It collects dues from the members and, in return, provides them with medical attention and hospital services. The department of justice alleges that the Medical Society of the District of Columbia has sought to dissuade its members from taking employment by this organization, that doctors who have taken this employment have found themselves barred from the staffs of Washington hospitals and that their professional liberty has been restricted by what the department of justice calls "organized medicine."

The medical profession has resisted such organizations as that named in the Washington complaint on the ground that they will result in inferior standards of medical service and will encourage the subservience of the medical profession to lay control under conditions which are strongly dominated by financial considerations. Some of these organizations are alleged to be formed primarily for the financial gain of the promoters. The department of justice does not seem to realize that in attacking medical societies as alleged monopolies it may be clearing the way for a monopoly of unusual danger because of its lay control. The case will be followed with interest because of its deep concern to the health of every one.

### THE MEDICAL PROBE

*Washington Evening Star, August 2*

The Department of Justice, in announcing its proposal to initiate grand jury proceedings against the American Medical Association and the District of Columbia Medical Society, is relying on the assumption that the Sherman Act applies to a monopoly of professional services as well as a monopoly of goods.

That is a novel proposition and a judicial determination of its validity should be welcomed by the medical profession as well as by the courts. The extent to which government can or should regulate the professional work of doctors is a highly debatable proposition, and the first step in resolving it is the ascertainment of how far, as a matter of law, the government can go in that direction.

If the courts uphold the right of regulation it will then be incumbent on the Department of Justice to prove that the members of the medical organizations have in fact combined to do the allegedly illegal acts. Until that proof is forthcoming the public should endeavor to keep an open mind on the question and not become prejudiced against a profession on the strength of charges yet to be substantiated.

The department has suggested that it would recommend withdrawal of the grand jury action if the doctors would agree to sign a suitable consent decree eliminating the allegedly illegal practices. That is a proper attitude for the government to take, provided the grand jury proceedings are in no sense used as a "club" to compel the signing of such a decree.

While it is not likely that the officials of the medical societies will look with favor on the signing of a decree, they should be free to decide that point without being subjected to pressure or promises. The issues here at stake are too important to permit the development of a situation like that in Milwaukee recently, when a federal judge dismissed a grand jury after it had voted Sherman Act indictments against some automobile finance companies because he thought the Justice Department officials had used the grand jury as a device to force acceptance of a consent decree.

### MEDICINE AT CROSSROADS

*Boston Herald, August 2*

The whole question of assuring the American people of adequate medical care, which was discussed at length at the recent Washington conference, has suddenly been focused on one point by the action of Asst. Atty.-Gen. Thurman Arnold in formally accusing the American Medical Association and the District of Columbia Medical Society of violating the federal antitrust laws. It is safe to predict that the settlement of the case will probably influence the methods of the practice of medicine in the United States for years to come.

The facts, at least as Mr. Arnold presents them, are simple. The Group Health Association, Inc., was voluntarily organized a year ago by 2,500 small-salaried government employees to provide themselves with medical care for a small monthly fee. When the association attempted to retain competent physicians, it found that the District of Columbia Medical Society had threatened to expel any of its members who might enter into an agreement with the association. It also discovered that the society had forbidden its specialist members to consult with physicians employed by the association, and that it had prevailed on several Washington hospitals to refuse admittance to the association's doctors. It is well known, as Mr. Arnold says, that the Washington episode is not unique, and that the medical societies have similarly opposed the organization of group medicine association and hospital insurance plans in several other cities.

If these ventures will inevitably lower the quality of medical care and the A. M. A. can demonstrate that certainty, it is on strong ground. Plainly we must not embark on any scheme which will impair existing medical standards. But if the A. M. A.'s objective is merely to freeze our present medical facilities into a state of permanence and to prevent the free and honest trial of new facilities, it is on exceedingly weak ground.

As it has been declared many times in recent years and as it now must be apparent to almost everybody, the very rich and the very poor today receive the best medical treatment. The rich can afford to engage the best physicians and surgeons. The poor can obtain free treatment—often from the same doctors—at a hospital or clinic. But the middle class, the people with incomes of from \$1,000 to \$2,500 a year, usually have great difficulty and frequently suffer real hardships in attempting to meet the cost of a serious illness. The group scheme offers them the opportunity of buying protection against the financial impositions of illness just as most of them now insure themselves against the loss of their homes by fire—through small monthly or yearly payments.

In reply to the antitrust charges, the A. M. A. has immediately revived the bogey of government regimentation and "social-

ized medicine." The essential point is that these voluntary, cooperative organizations—which nobody has to join unless he wants to—really promise to obviate the need of government subsidy and regulation.

Public funds and private charity already take care of the poor sick. Our present objective should be to forestall the necessity of caring for the middle class sick in the same way. Certainly from the taxpayers' standpoint it is much more desirable to encourage 2,500 government employees in Washington—or any other group of citizens—to finance their own medical care through a cooperative arrangement than to deny them that right and invite them to seek public or private assistance whenever they fall ill.

Mr. Arnold was careful to state in his opinion that he is not accusing the members of the medical societies of a moral offense. Indeed, he invited them as "persons of distinction and good will" to cooperate in ending the impasse "so that there may be free and fair competition between the forms of organization and the older types of practice." It is to be hoped that the A. M. A.'s Chicago office will dismount from its high horse and join with the humble laity in a search for the just and intelligent course.

### A VERY BROAD INDICTMENT

*Washington Post*, August 2

In an unusual application of the Sherman Act, the Department of Justice proposes to move against the District Medical Society and the American Medical Association. Assistant Attorney General Thurman Arnold is persuaded that both have acted in monopolistic fashion in opposing the Group Health Association formed here among government employees.

Heretofore the function of the antitrust law has been to break up economic combinations acting in restraint of trade. In invoking it against a representative professional group many confusing considerations enter the picture.

The statement by the Department of Justice "interprets the law as prohibiting combinations which prevent others from competing for services as well as for goods." Under this broad interpretation it might be said that any move of organized medicine to debar quacks is potentially illegal. And it might further be suggested that the entire program of the National Labor Relations Board, founded on recognition of majority labor unions for collective bargaining, is perilously close to violating the Sherman act. An administration which lays great stress on the right of labor to organize should be doubly careful in suggesting that similar action by professional men may be open to legal question.

Despite doubts as to the law in Mr. Arnold's proposal, there is no question of its broad social significance. It will serve to advertise and intensify an issue which concerns intimately every citizen of the land. Possibly it may serve to clarify the main aspects of this issue, though an increase in acrimony seems more likely. The role of the GHA in the case is largely incidental. It represents merely a convenient example of the attempt to improve the economics of health, a movement which organized medicine has thus far done more to oppose than to foster.

Indeed, it seems doubtful whether the GHA can profit in any direct way even if the projected grand jury investigation should sustain the Department of Justice. The local hospitals might be forced to open their doors to the GHA staff. But probably so much antagonism would be cultivated by the court fight that GHA members could have little confidence in using the institutions. It needs only a very casual acquaintance with the medical profession to realize that its leaders are not the type of men who can be coerced into acting against ideals for which many of them make continuous sacrifices. And the intention of the American Medical Association to fight the issue is already abundantly clear.

In view of this situation Mr. Arnold's statement must be regarded as unfortunate, in spite of an obvious effort to assuage the sting in the indictment. And regret at the widening of the breach is strengthened by the recent signs suggesting that organized medicine was on the point of modifying its opposition toward the group health movement. Locally, the GHA president

last week made a very reasonable peace offer to the medical society and, unless reports are greatly mistaken, a disposition to bury the scalpel has been developing among the latter's general membership. On a country-wide scale, the discussions of the National Health Conference summoned here recently are believed to have impressed organized medicine with its obligation to cooperate with rather than to block well meaning attempts to lower the cost of medical care.

Without the best medical leadership any efforts to reach the proper solution of the national health problem is doomed. It is to be hoped that no legal disputations will be allowed to obscure this cardinal fact.

### MEDICAL MONOPOLISTS?

*Baltimore Sun*, August 2

In his statement of his intention to file complaint against the District of Columbia Medical Society on account of alleged efforts to thwart the growth of experiments in group medicine, Assistant Attorney General Thurman Arnold makes it clear that it is his purpose to make possible "free and fair competition between the new forms of organization and the older types of practice." He cites practices which he believes are in violation of the Sherman Act: exclusion from hospitals of doctors who serve members of group health associations and expulsion of such doctors from medical associations. He believes that similar action has been taken by medical societies all over the country, where cooperative groups have appeared.

Whether or not Mr. Arnold can prove his case and make it stand up as applicable under the Sherman law, he has undoubtedly added an interesting chapter to the intense debate on group medicine and state medicine now being carried on in medical circles throughout the United States. The doctors are passionately divided on the subject and in some localities the fighting is doubtless carried on without gloves. Although it is plain from Mr. Arnold's citation of statistics on the relation of health to income that he is friendly to an extension of public medicine, he can hardly be accused of unreasonable action in so far as he is attempting to maintain a competitive situation between the advocates of two forms of medical practice. A hospital is not usually the private property of doctors who hold one view of this question, and it is difficult to understand why doctors who disagree with them on economic matters should on that ground alone be barred from treating their patients in such institutions.

Mr. Arnold's statement and any proceedings that grow out of it ought at least to have the effect of bringing into public discussion the ins and outs of the debate now proceeding among doctors, the possible relation of professional standing and skill to willingness to participate in cooperative schemes for medical care, etc., etc. At any rate, it will be entertaining to observe the medical reaction to the charge that a learned society of professional men has employed practices "in restraint of trade."

### SOCIALIZED MEDICINE?

*Chicago Daily News*, August 2

The announced intention of the Department of Justice to bring suit against the American Medical Association under the antitrust laws raises some interesting questions.

The department, according to the *New Deal's* new trust buster, Assistant Attorney General Thurman Arnold, thinks that the antitrust laws apply to the offering of services as well as to the production of goods. That, if we are not mistaken, is a new interpretation. The line between offering one's services and offering one's labor is hard to draw. If Mr. Arnold can make this new interpretation stick, will there not be a conflict between the Wagner act, which favors collective bargaining in the offering of labor, and the antitrust laws, which might then be twisted into a weapon against trade unionism?

Specifically, the federal government charges that the American Medical Association is conspiring to make group health plans impossible, by expelling from the association doctors who join in such plans, and by forbidding its members to aid patients

who subscribe to such plans. If it is true that the association does this, and does it in a spirit of opposition, not because it is seeking to maintain high ethical and technical standards in the profession, we think it is following a mistaken course. Mr. Arnold should produce the evidence.

But meanwhile, it is intimated that if the association will change its policy so as to encourage health plans in future, the government may drop its suit. Does this mean that the New Deal, in its continued mood of socialistic experiment, is bent now upon bringing about socialized medicine? If that is the real aim, the administration should say so plainly. Certainly the people are entitled to the best medical care that the science and devotion of the medical profession can provide. But is not the profession already giving such care? Every community has hospital arrangements for patients too poor to pay. Every conscientious physician and surgeon contributes some of his time without charge to the service of the poor, and does so quietly, as a matter of course. But we do not believe that the profession as a whole is in a mood to submit, even under pressure, to New Deal regimentation. And neither do we believe that the average American citizen is in a mood to let the government tell him, when he falls ill, which doctor he must have.

### IS THERE A MEDICAL MONOPOLY?

*St. Louis Post-Dispatch, August 5*

An interesting and perhaps highly significant development in the debate over providing adequate medical care for all the people is the Department of Justice's announcement that it will seek a grand jury investigation in the District of Columbia into the activities of organized medicine. The department was convinced by its own inquiry, says Thurman Arnold, Assistant Attorney-General, that violations of the antitrust laws had occurred.

A workers' health cooperative, similar to many that have sprung up in recent years all over the country, is the center of the dispute. Members of these groups pay dues, in return for which they receive medical care when needed from physicians retained by the organization. Orthodox medical organizations have opposed such groups virtually wherever they have appeared.

In Washington, it is alleged, they attempted to stop operation of the cooperative by threatening its staff physicians, and even doctors who consulted with them, with expulsion from the District Medical Society. Group physicians were barred from practice in Washington hospitals, it is charged. Mr. Arnold views such tactics as "attempts on the part of one group of physicians to prevent qualified doctors from carrying on their calling."

Whether or not actual violations of the antitrust laws occurred, there is no disputing the fact that the actions of organized medicine—the American Medical Association and most of the state and local societies—in opposing various humanitarian health plans have on all too many occasions savored of efforts to safeguard a monopoly for their members.

Millions of persons in this country cannot meet medical bills for their illnesses, not to mention those for periodic examinations on which preventive medicine, the basis of a healthy nation, must depend. On the other hand, there are thousands of physicians who, despite this crying need for their services, are able to make only the barest of livelihoods. To bring demand and supply together is the motive of the plans that have been proposed, which include socialized medicine, compulsory health insurance, government subsidies and voluntary cooperatives.

Of all these, the cooperative is the most moderate, the solution least upsetting to the present system. Yet organized medicine opposes it as well, as was seen a few months ago in St. Louis when the local medical society sought to bring an ouster suit against the Missouri Pacific Hospital Association, which supplies medical services to that railroad's employees. Fortunately, the Attorney-General's office refused to institute the proceeding.

A ferment for better and more widespread health services is stirring among the people, as well as among many forward-looking members of the profession. A committee of 430 members, since grown to more than 1,000, last fall launched a formidable "revolt" to liberalize the attitude of the American Medical Association. The caliber of the men who signed this "medical declaration of independence" proves that the movement must be taken seriously. For instance, among St. Louis physicians on the original list were Vilray P. Blair, David P. Barr, the late Ellis Fischel, Borden S. Veeder, H. L. Alexander, J. Albert Key, Ernest Sachs, Fred Taussig, Evarts A. Graham and Sidney I. Schwab.

Many of the practitioners who oppose a change are undeniably sincere, but their arguments have been refuted in numerous foreign countries where various forms of practice designed to reach the masses at costs within their means are in successful operation, and without the deterioration of ethical standards or medical practices which our own alarmists predict.

A committee of health experts has recently urged an \$850,000,000-a-year program of government public health activities. With such a vast scheme in the air, organized medicine isn't very smart in opposing the moderate cooperative plan, in which no subsidy is paid and no government interference exists. The sole ground for opposition seems to be "unfair competition," but the patient who benefits by a cooperative plan can give that plea little hearing, particularly since under competitive medicine fees are still at a point where an unexpected illness may be ruinous to an ordinary family budget.

The reply of the American Medical Association's president-elect, Dr. Rock Sleyster of Milwaukee, indicates no yielding in organized medicine's stand. He insists the A. M. A. "has the right to enforce certain membership requirements and expel members who fail to comply with them," and that "hospitals are private institutions and have the right to determine which doctors shall practice in them."

It is assuredly true that these rights exist, but invoking them against the health cooperatives and their staff physicians betokens a stand against progress, a closed mind against the enlightened experimentation without which medical economics, exactly like medical science, cannot advance.

Mr. Arnold's action may not disclose a "medical trust," but it should cast needed light on the efforts of standpat groups to block a long-needed reform. Punishment of any persons guilty of threats and coercion would be welcome, but better would be the awakening of a cooperative spirit in those who now oppose all changes in the private fee system.

### REGULATION GONE MAD

*Alton (Ill.) Evening Telegraph*

It is announced that the trust busting part of the New Deal is to proceed with criminal action against representatives of the American Medical Association because that body is enforcing its rules against doctors, and in the control of hospitals recognized by the A. M. A. The announcement certainly caused a great surprise to the doctors who have regarded it as their own right to set up such rules and regulations as they deem best for the interests of their profession. The surprise over the announced criminal prosecution of the doctors was not limited to medical men but extended to practically all others. The question is, where can one expect the prosecution to be stopped? Will it take in representatives of all the voluntary associations of cults and crafts and professions which set up rules by which exclusion becomes the penalty for failure of a member to live up to them?

It is recalled that some time ago a suit came to a conclusion in which oil men were penalized for living up to rules and regulations designed for conservation of the oil business, promulgated by them at the very suggestion of a department of the federal government. There are other prosecutions in sight so that people who belong to trade organizations, or to any other groups, have come to be a bit shaky. Is there any reason why, if it is unlawful for such groups as the doctors to organize and make their rules, that it is not unlawful for organized labor to prescribe rules under which its services may be sold and fix



what working agreements will be acceptable? The pattern of the rules of the doctors and of the labor organizations is very much the same. Also, the rules of the associations of special groups generally are very much alike in their working and their objects.

It does seem that the use of criminal prosecution is a poor way for the New Deal to persuade groups to accomplish what the New Deal desires. The difference lies in the fact that socialized medicine is strongly opposed by organized medicine, while it is being advocated by the New Deal, to the extent that criminal proceedings will be launched to make it possible.

The doctor has only his services to sell. He has no assets in his profession to leave his family when he becomes disabled or dies. He thinks he should be allowed to control his professional relations in his lifetime. In that last respect he is like every other person who has worked hard and accumulated something he regards as particularly, peculiarly his own by right of achievement. The lawyer with his bar association, the newspaper man with his A. N. P. A., the dentist with his dental society and other such groups are equally culpable with the doctor, not to mention all the unions in organized labor, all the churches and other religious groups—one and all are just as guilty, just as deserving of prosecution as the doctors, in so far as they may regulate the professions, limiting the actions, the relations of their members to the public and with each other.

The prosecution of the doctors is just another illustration of the madness of the course of the New Deal.

### MEDICAL CARE PROBLEMS

*New Haven (Conn.) Journal Courier, August 3*

Probably what everybody needs most in the present state of the discussion of medical facilities for lower income groups is poise and calm. Assistant Attorney General Thurman W. Arnold has announced an intention of examining in a grand jury investigation the resistance which American Medical Association members and groups are said to make against operation of a group medical care plan among government employees in the District of Columbia. This is the most recent crisis in a debate running back now two or three years; much of it centering, indeed, in New Haven and the Yale Medical School.

Mr. Arnold is a believer in the usages of symbolism in government, having written two books to prove it. It is not at all unlikely that the grand jury investigation is intended symbolically to represent the national government's attitude toward the question of medical care. To conclude that the A. M. A. or its members or its affiliates will be found guilty of violation of the antitrust acts is certainly a long exercise in forward speculation. As Mr. Lawrence suggests in his dispatch this morning, Mr. Arnold may run afoul of statutes protecting labor unions; one thinks particularly of cases in which the antitrust acts were in earlier history sought to be brought to bear against labor unions.

But whatever the result of such litigation as the Department of Justice seems to propose, it is extremely unlikely that medical care plans, federal or otherwise, will get far without the cooperation of the doctors. The possession of medical skill, after all, is something of a private monopoly; the government cannot force doctors to serve against their will; and clearly will not wish to do so. This is no problem in the mobilization of wholly interchangeable laborers to man an assembly line in a mass production factory. No plan for medical care can prosper in the United States without the support of the best practitioners.

It is possible some of those practitioners have been narrow in their judgment of the problem. It is practically certain that narrowness has been overemphasized by critics of the organized profession. Nobody doubts that many competent doctors lack remunerative practice and that many individuals and many areas in the United States lack adequate medical care. The problem will not be settled by tub-thumping on either side. It must be settled in a way which will ensure general cooperation from the medical profession. The public may well demand of both sides toward that end an early meeting of the minds.

### SOCIALIZED MEDICINE

*Dakota Republican, Vermillion, S. D., August 4*

The question of socialized medicine keeps showing up in the public prints. It is quite in line with the other experiments in socialization which the present administration is fostering, most of which are pitiful failures. A doctor working as a federal official on a stated salary would spend a few hours a day waiting on his patients, and the rest of the time making complicated reports for another army of clerks in Washington to file away. He would no longer take a personal interest in his clients, or strive unduly to advance himself in his profession. It is true that the present system works many hardships. The public funds take care of the medical needs of the indigent. The wealthy class can afford the luxuries of the best available medical and surgical attention, while to the great mass of people of moderate means a major illness in the family becomes something of a financial tragedy. But there are some things that money cannot buy, nor political chicanery provide. We like to think of the doctors we all know who will eat when they can, and sleep when their patients don't need them; men who will get out of a warm bed on a blizzard night to follow a snowplow for miles to aid some sick or injured person. We have known what the kindly sympathy and thoughtfulness of the doctor can do when there is illness in the family. To say that our doctors are actuated solely by the hope of pecuniary gain is a libel. Such things as that would soon pass away under socialized medicine. Doctors would become mere hired help, putting in their hours, and looking ahead to annual vacations and eventual retirement pay. We want none of it.

### AS OLD AS MEDICINE

*Binghamton (N. Y.) Press, August 2*

Announcement that the Department of Justice is about to initiate antitrust law proceedings against the Medical Society of the District of Columbia and the American Medical Association sounds big and complicated. Big it is, but not complicated at all. It is just the same old business that started way back yonder.

The world was very young then but old enough to know something about the properties of roots and herbs. On the other hand, there was the school that believed in charms and exorcisms, the Shamans who were somewhat political in their viewpoint and who usually held something of a monopoly on the tribal doctoring.

Those boys never got along with the brewers of potions and extracts. In one form or another they have appeared all through the history of medicine. They clustered around the thrones of medieval monarchs and slowed down the development of medicine as a science. When things got hot they had a few heads lopped off; threw some of the struggling medicos of the Middle Ages into the gaol and dungeon. They were able to and did employ the leverage of government on the members of the profession with whose methods they did not agree.

It is unfortunate that coercive action of the type contemplated is being swung as a club over the head of the American Medical Association and its allied groups which have rejected the federal plan of state medicine. An honest division of opinion exists in the medical profession. The chief objection to state medicine which is entertained by thoughtful medical men everywhere is the danger of its control by the laity and the further reasonable belief that politics would get into it and break down medical ethics and medical standards.

In either or both instances the patient would suffer much more than the doctor.

There is room for plenty of argument on both sides, and both sides are recruited from vast numbers of medical men who are entirely honest in their convictions. They aren't being arbitrary about it. Even a great many of those who oppose the idea of state medicine because of its possible effect upon the patient, whose interest every doctor is bound to safeguard, cheerfully admit that the profession may have to give up some of its rights along with the business groups of the country.

In almost every state and county medical society the country over such honest division of opinion exists. Each side has its own idea of the proper diagnosis. Neither side has, up to now, thought the problem through fully to a point of reasonable solution.

But if coercive methods are employed by the federal government to drive the medical profession of the United States into submission a great many unpleasant things are likely to happen. Even those medicos who are inclined to go along with the administration's plan will resent being driven. There isn't anything in the world quite so stubborn as a doctor. He has to be that way because his battle is with the most stubborn adversary of all.

So the decision to invoke antitrust laws against the medical profession with such obvious purpose is indeed unfortunate. It is to be hoped that the federal government will reconsider before the thing goes too far.

### NOW IT'S THE DOCTORS

*Wilkes-Barre Record, August 2*

It was only a question of time. First the bar got it from the Roosevelt administration. The press got it and is still getting it. The clergymen were dropped like hot potatoes after they had been circularized with questionnaires on the New Deal and had answered according to their own liking but not according to the liking of the administration. Now it is the doctors who are being taken up to the public whipping post. Politely and with some apologies, it is true, but to be spanked, just the same.

American Medical Association has violated the antitrust laws, so charges the New Deal's justice department. A grand jury indictment is to be sought against the medical society of the District of Columbia and the American Medical Association on the allegation that they have expelled a member who cooperated with members of the staff of the Group Health Association, an organization of government employees formed for treatment of its subscribers. Generally the department holds that the District Medical Society, the American Medical Association and some of the officials of both of these organizations "are attempting to prevent this association from functioning."

It seems that the doctors may not have a union. When they combine, the department, in its own words, "interprets the antitrust law as prohibiting combinations which prevent others from competing for services as well as goods."

An assistant attorney general, possibly thinking that among the doctors were some New Deal voters, carefully explained that the department does not take the view that the offenses committed are crimes which reflect upon the character or standing of the persons who may be involved. He specifically declared there was an absence of moral turpitude. But the law is the law and must be obeyed.

Various polls have revealed that professional classes as a whole have had no enthusiasm for the New Deal. The accused doctors who are told in advance that their offenses are not "crimes which reflect upon the character or high standing of the persons who may be involved" should be grateful for this testimony to their character. The bar and the press have had to get along with less tender treatment.

### MEDICAL 'UNIONISM'

*South Bend Tribune, August 3*

In some respects, as the *Chicago Tribune* points out, the medical associations resemble trades unions. They pass judgment on the personal and technical qualifications of persons in the medical profession, extend or withhold the association membership privilege on the basis of that judgment and strive to make nonmembership a serious professional handicap. The *Chicago* newspaper's observation that "there is no union scale for doctors" should be modified. The fees for services are fairly uniform in various communities, with appreciation of local conditions.

It is true, however, that "there are no union hours" for medical practitioners. No medical association has decreed a forty-four hour week for its members. The public, now that

the issue has been intensified by political intervention, should weigh the fact that "the ablest medical men in every community give their services without pay to the poor as a matter of course." Many proponents of socialized medicine argue that the middle class, between the indigent poor and the financially well-to-do, suffers by the present individualistic medical system. The cooperative medical service group in Washington, D. C., on whose behalf the department of justice is intervening for a test case, consists of moderate salaried government employees and of physicians willing to incur medical association displeasure.

Members of the group, pledged to pay \$2 to \$3 a month for medical service whether or not the eventual service actually matches the financial outlay, obviously classify the individualistic system as a liability. Who is to blame? "Few doctors are rich," the *Chicago Tribune* comments, "and many an able physician earns little more than a bare livelihood." Official statistics confirm that. It is pertinent that physicians with distressingly small incomes—some actually have been on the dole in the larger American cities—devoted years and expended much money, meanwhile sacrificing opportunities to earn, for education for that profession.

The *Chicago Tribune* directs attention to the fact that no labor union has been prosecuted by this federal administration for repressive tactics more violent than those attributed to the American Medical association and its District of Columbia subsidiary. "Indeed," that newspaper recalls, "the labor board has repeatedly ordered the reemployment of . . . men guilty of rioting." When the ethical objectives of the American Medical association are given proper consideration it becomes plain that the federal government should be cautious in the impending proceedings. The welfare of the medical profession and the dependent public should have precedence. A "medical trust" investigation with the familiar flamboyant political trimmings designed to break down professional public resistance to the socialized medicine movement, already concrete in legislative proposals, might cause irreparable damage to public health over the long term.

### PUTTING THE SCREWS POLITELY ON THE DOCTORS

*New York Sun, August 1*

The New Deal's Department of Justice has moved against the American Medical Association as a violator of the antitrust laws. Its offense, in brief, is that it has expelled one of its members who cooperated with members of the staff of the Group Health Association, an organization of government employees formed for treatment of its subscribers. It is also alleged that Washington hospitals have been shut against the doctors of the group.

A reading of the opinion of the department would be proof that Attorney General Cummings did not write it. Instead of his trustbusting style it has the soft, even pussy-foot, approach of his assistant, Thurman Arnold. Professor Arnold, while under orders to shake a club at the medical association, possibly remembered that some of its members, when they could reach the polls without neglecting the critical case of Mrs. Jones, voted for the New Deal. So he takes pains to explain that the offenses committed are not "crimes which reflect upon the character or high standing of the persons who may be involved." They have no more moral turpitude than a reckless driver who is a person of "distinction and good will in a hurry to meet his legitimate engagements." However, the Professor explains, the law says so and so and the Department of Justice must follow up.

The accused doctors may keep their silk hats on. They may also reflect that labor unions and farmers may combine but physicians must not do that. They may remember, too, that there is a strong current in the New Deal toward socialism, including socialized medicine. Professor Arnold's lecture on the high cost of medical treatment should amuse at least one veteran practitioner of this town who had 130 calls in a recent month and collected a total of \$3 for his pains.

But the Washington doctors may as well prepare to be indicted. Their lawyers can read to the jury some of Arnold's touching assurances of their lack of moral turpitude.

## NATIONAL HEALTH CONFERENCE AND ITS SUGGESTED PROGRAM

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MONTGOMERY, ALA.

Whether one is inclined to agree not at all, in part or in toto with the report of the Technical Committee on Medical Care of the Interdepartmental Committee to Coordinate Health and Welfare Activities recently submitted at the National Health Conference held in Washington, every thinking physician, because of its import and tremendous scope, should carefully study its entire content. Specifically, this committee makes five recommendations for coping with existing deficiencies believed to be existent in the Nation's health services:

Recommendation I calls for a pronounced expansion of activities in the fields of general public health, maternity and infancy health services, with particular emphasis on the ubiquitous enemies of mankind, such as tuberculosis, the venereal diseases, pneumonia, cancer and mental disorders. Such pretentious expansions, on a nation wide scale, will call for an additional annual expenditure by federal, state and local governments of some \$365,000,000, and it is recommended that the federal government carry one-half the burden of this proposed expansion. In this recommendation one sees not only recognition but approval given to the principle of federal subsidies to states in perfecting and strengthening local health agencies in their efforts toward controlling and conquering diseases with which they, single handed, are unable to cope. This principle of federal cooperation with states in the health field is already smoothly and efficiently functioning, through the provisions of the Social Security Act with the United States Public Health Service and the Children's Bureau. The need on the part of states—at least most states—for such federal aid has been amply demonstrated during the short time in which the act has been operative. Thus far in the experiences and relationships of state health departments with the federal agencies dispensing the health provisions of this act, there has been little or no tendency to usurpation of the rights and prerogatives which should properly reside within states; in short, the cooperative, not the coercive, spirit has prevailed. In the more recent federal legislation, passed by the last Congress for the purpose of aiding states in stamping out a specific human scourge—the venereal diseases—one sees preserved these principles of cooperation both in the act itself and in the formulated policies of administration. It would seem, therefore, that through this approach of further broadening an already established policy of cooperation between existing federal and state agencies, working in unison and harmony, lasting good should be accomplished through intensified programs specifically aimed at such major and widely distributed problems as the venereal diseases, tuberculosis, malaria, cancer, the pneumonias and the like. As to the importance of the public health significance of these and other health problems, both public health workers and the medical profession are in accord. Should governmental agencies—federal and state—move toward making much larger sums available for these

purposes, it is felt that the details of the machinery for satisfactory operation could readily be worked out between the medical profession and the official health agencies already existing and whose responsibility it now is to administer appropriations made for the protection of the public health. In truth, such is already the practice in many states.

Recommendation II calls for expansion of existing hospital facilities, which, in the committee's opinion, are ill adapted to the varying needs of people living under different social, economic and geographic circumstances. Here one sees a new venture by the federal government into a hitherto unexplored field and is prompted by an apparent utter inadequacy of hospital facilities, at many points and over wide rural stretches, to give hospital care for the necessitous and medically necessitous. This particular problem—either for general hospital facilities or for tuberculous or mental cases—is not an acute one in the larger urban centers or in the more affluent states for the reason that such governmental agencies, possibly more forward looking and progressive, have been able to finance these demands made by society. However, many states, one of which is my own, have not, largely because of financial impoverishment, moved thus far along. No doubt exists in my mind as to the urgency of this need, not only in his own state but also in many other states similarly circumstanced. Nothing approaching adequacy in the realm of hospitalization for the indigent or tuberculous case exists. One is reminded of Tantalus of Greek mythology fame, who, standing neck-deep in water and with luscious fruits dangling overhead, yet suffered death from starvation and thirst because of these vital things ever receding from his lips. This second recommendation not only takes cognizance of an unhappy state of affairs but proceeds even further by suggesting federal financial cooperation with states in remedying these defects. Should not such federal aid, extended to states and sanely administered by state agencies possessing the professional and technical knowledge necessary in this field, prove a wholesome incentive to them to do their full part in bridging over a yawning gap in contemplated nation wide plans for human betterment?

Recommendations III, IV and V need not here and now be discussed. The committee says: "The Committee does not suggest that it is practicable to put into effect immediately the maximum recommendations."

Might not, therefore, attention be focused on the principles embraced in recommendations I and II, for the administration of which, the machinery, in large part, already exists and in which, up until now, no thought of regimentation has been made manifest? Earnest and cooperative effort put forth by all concerned—not the least of which is the profession of medicine—should shed an abundance of light to guide further our faltering footsteps along a tortuous and difficult path.

## MEDICAL ECONOMIC ABSTRACT

CHILD WELFARE SERVICES IN  
INDIANA IN 1937

The extent of cooperation of the Indiana State Medical Association and the Indiana State Dental Association in the welfare services, and especially in the care of child health in Indiana, is described in a survey of maternal and child health of the Indiana State Board of Health appearing in the May 1938 issue of the *Journal of the Indiana State Medical Association*. Seven committees of the state medical association have cooperated in carrying out the program. The Committee on

Postgraduate Study has conducted a campaign of medical education throughout the state, and the Bureau of Publicity has arranged for approximately 450 health and dental lectures to the public. The State Dental Association has been responsible for a dental demonstration program, consisting of a complete dental office on wheels, which is stationed in selected areas for different periods and where dental care for all indigent children between the ages of 3 and 10 years is supplied free. The state medical association is conducting a study of the causes of infant and maternal mortality in cooperation with the Bureau of Maternal and Child Health.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

### ARKANSAS

**Society News.**—At a meeting of the Pulaski County Medical Society June 6 Drs. Ellery C. Gay and Merlin J. Kilbury discussed surgical and pathologic topics respectively and Dr. John N. Compton, "Nicotinic Acid in Pellagra." All are from Little Rock.—Dr. Silas C. Fulmer, Little Rock, among others, addressed the Ouachita County Medical Society June 2 on diabetic coma.—A recent meeting of the Pope-Yell County Medical Society was addressed by Drs. John H. Moore, Delaware, and Charles R. Teeter, Pottsville, on diphtheria and sulfanilamide, respectively.—Dr. Elizabeth D. Fletcher discussed "Treatment of Dementia Praecox with Metrazol" before the Lonoke County Medical Society in Benton recently and Dr. Robert H. Foster, "The Insulin Treatment of Dementia Praecox."—The Tri-County Clinical Society was addressed in Prescott May 26 by Drs. Robert R. Kirkpatrick, Texarkana, on earache; Merlin J. Kilbury, Little Rock, some lesions of the cervix and uterus, and Joseph H. Sanderlin, Little Rock, the climacteric.

### COLORADO

**Gift of Medical Caricatures.**—Forty-six caricatures of eminent men in medicine have been given to the library of the Medical Society of the City and County of Denver by Earnest C. Watson, Ph.B., professor of physics, California Institute of Technology, Pasadena. They are from the originals of those published in *Vanity Fair*, duplicates of which are to be found in the Royal College of Surgeons in London. They are said to comprise the only complete set in any library west of Chicago. The caricatures were presented to Dr. Samuel Fosdick Jones, Pasadena, Calif., a member of the medical society, who has been interested in the development of the library.

**Licensure from National Board Required.**—In view of the increasing difficulties of investigating the standard of medical colleges located outside the United States, its territories and insular possessions, the Colorado State Board of Medical Examiners, at its regular quarterly meeting in Denver, July 5, unanimously adopted the following resolution:

*Resolved*, That no graduate of a college of medicine located outside of the United States, its territories and insular possessions shall be permitted to take the examinations for medical licensure in this state unless he has first qualified before and become licensed by the National Board of Medical Examiners. He may make application to take the examinations for licensure in this state, provided he, at the time of making such application, files with this board a certificate of ability granted by the Colorado State Board of Examiners in the Basic Sciences. This resolution shall become effective immediately and shall apply to citizens of the United States as well as to citizens of other countries.

### CONNECTICUT

**State Medical Election.**—Dr. Joseph I. Linde, New Haven, was chosen president elect of the Connecticut State Medical Society at its annual meeting in Groton June 1. Dr. Hugh B. Campbell, Norwich, was installed as president and Dr. Creighton Barker, New Haven, was reelected secretary. The next annual session will be held in New Haven in May 1939.

**Annual Clinical Congress.**—The fourteenth annual clinical congress of the Connecticut State Medical Society will be held in New Haven September 20-22. The speakers will include:

- Dr. Grantley W. Taylor, Boston, Management of Regional Lymph Nodes in the Treatment of Carcinoma.
- Dr. Nicholson J. Eastman, Baltimore, Pyelitis in Pregnancy.
- Dr. Edward D. Churchill, Boston, Surgery in Pulmonary Disease.
- Dr. Harry Goldblatt, Cleveland, Experimental Observations on the Pathogenesis and Treatment of Essential Hypertension.
- Dr. Henry T. Chickering, New York, The Treatment of Pneumonia.
- Dr. Cornelius P. Rhoads, New York, The Role of Vitamins in Health and Disease.
- Dr. Samuel T. Orton, New York, Certain Disorders in Speech, Reading and Writing in Children and Some Resulting Behavior Disorders.
- Dr. Thomas Duckett Jones, Boston, Rheumatic Fever.
- Dr. Zacharias Bercoovitz, New York, Diagnosis and Treatment of Ulcerative Colitis.
- Dr. John Homans, Boston, Thrombophlebitis.
- Dr. Harold G. Wolff, New York, Migraine and Its Treatment.

There will be symposiums, panel discussions, five minute talks and a short course on contraceptive devices. Many Connecticut physicians will be on the program, including members of the staff of Yale University School of Medicine.

### DISTRICT OF COLUMBIA

**Dr. Christie Receives Gibson Award.**—Dr. Arthur C. Christie, formerly president of the Medical Society of the District of Columbia, recently received the second Dr. Frank E. Gibson Award in recognition "of meritorious contributions to medical science." The prize is presented by the Washington Medical and Surgical Society and is named in honor of Dr. Gibson, permanent treasurer of the society. Dr. Christie formerly served as professor of operative surgery and roentgenology at the Army Medical School, Washington, as professor of radiology, George Washington University Medical College, and as professor of clinical radiology, Georgetown University Medical School. He was president of the fifth International Congress of Radiology in Chicago in 1937 and has also held this office with the American Roentgen Ray Society and the American College of Radiology. He was born in Pennsylvania and graduated at the Cleveland College of Physicians and Surgeons in 1904.

### FLORIDA

**District Meeting.**—The second annual meeting of the Northwest Medical District Society was held at the Yacht Club, Panama City, July 14. Dr. William J. Blackshear, Panama City, president of the Bay County Medical Society, gave the address of welcome. The speakers on the scientific program included Drs. Taylor W. Griffin, Quincy, "Black Widow Spider Bite"; Jesse N. McLane, Pensacola, "Chronic Maxillary Sinusitis Associated with Dental Caries"; Courtland D. Whitaker, Marianna, "Thoracotomy in Acute Empyema," and William C. Roberts, Panama City, "Obstetric Oddities Occurring in a Single Patient."

### GEORGIA

**Personal.**—Drs. Noel M. Akers, Macon, and Guy V. Rice, Chillicothe, Texas, have been appointed health commissioners of Emanuel and Wayne counties respectively.—Dr. William B. Buckner, Moss Point, Miss., has been appointed health officer of Dougherty County, succeeding Dr. Thomas W. Collier, who resigned Sept. 3, 1937, it is reported.—Rev. William Doris O'Leary, S.J., has been appointed president of Spring Hill College, Mobile; before entrance into the Jesuit order, Father O'Leary was a practicing physician. He graduated from the University of Georgia School of Medicine in 1921.

### ILLINOIS

**Spotted Fever in Illinois.**—The state department of health reports that eleven cases of Rocky Mountain spotted fever have been reported in Illinois so far this year against a total of eighteen cases reported in all previous years. Of the total this year one infection was known to have been imported, four were traced definitely to native tick bites and the remainder are believed to have been caused by native ticks. Four occurred in Johnson County and one each in Clay, Hamilton, Henry, McLean, Marshall, Morgan and Winnebago counties.

### Chicago

**Dr. Bellows Receives Ophthalmology Medal.**—Dr. John Bellows, instructor in ophthalmology, Northwestern University Medical School, has been awarded the medal in ophthalmology of the University of Buffalo for his paper entitled "Biochemical Studies on the Crystalline Lens." The medal is given "for outstanding work in ophthalmology." Dr. Bellows graduated at the University of Illinois College of Medicine in 1930.

**Civil Service Examinations.**—The Civil Service Commission of the city of Chicago announces the following examinations, among others, on the dates indicated:

- Chief sanitary officer, August 23; salary \$6,500.
- Chief medical officer, August 30; salary \$6,500.
- Bureau chief of communicable diseases, August 31; salary \$5,000.
- Medical examiner, September 7; salary \$3,000.
- Assistant medical superintendent, September 20; salary \$3,000.

The commission reserves the right under the "subjects, special subject, duties, report of experience, or all of them, to impose oral or practical tests and tests of physical qualifications and health."

### INDIANA

**Director of Venereal Disease Control.**—Dr. Wendall C. Kelly, Princeton, has been appointed state director for venereal disease control, effective July 1. Dr. Kelly has been in charge of a state health center in Princeton for Gibson, Posey, Pike and Warrick counties, where he will be succeeded by Dr. Wallace E. Childs, Madison. He graduated at Indiana University School of Medicine, Indianapolis, in 1936.

## KANSAS

**Society News.**—Dr. Clyde O. Meredith, Emporia, discussed "X-Ray Pelvimetry" before a meeting of the Lyon County Medical Society in Emporia July 5.—The Tri-County Medical Society was addressed in Newton June 6 by Drs. Arthur Graham Asher, Kansas City, Mo., and Galen M. Tice, Kansas City, on "Hypertensive Heart Disease" and "X-Ray of the Gastrointestinal Tract" respectively.

**Personal.**—Dr. Louie J. Beyer, Lyons, has been appointed a member of the Kansas State Board of Regents for a term of four years.—Drs. Chester E. Joss, Topeka, and James A. Wheeler, Newton, have been appointed members of the Kansas State Board of Medical Registration and Examination for a term of three years each.—Newly appointed members of the Kansas State Board of Health include Drs. Roscoe T. Nichols, Hiawatha, and Bert Anderson, Victoria, and Mr. Howard Rooney, Dodge City, each for a term of three years.

## LOUISIANA

**District Meetings.**—At a meeting of the Fifth District Medical Society in Monroe June 10 the speakers included Drs. Edwin A. Socola on "Banana and Banana Powder Therapy in the Diarrheal Diseases of Infants and Children"; Emmett L. Irwin, the gallbladder, and Thomas B. Sellers, office gynecology.—The Third District Medical Society was addressed June 27, among others, by Drs. Ambrose H. Storck on "Infections of the Foot and Leg" and Roy H. Turner, New Orleans, "Recent Advances in Vitamin Therapy."

**Colonel Craig to Retire as Professor of Tropical Medicine.**—Col. Charles Franklin Craig, medical corps, U. S. Army, retired, will retire as professor of tropical medicine and head of the department at Tulane University School of Medicine, New Orleans, September 1, and will then be appointed emeritus professor. Born in Danbury, Conn., Colonel Craig graduated at Yale University School of Medicine, New Haven, in 1894, and joined the army medical corps in 1898, becoming colonel in 1918. Among other positions, he was a member of the U. S. Army Board for Study of Tropical Diseases, Manila, from 1906 to 1907; assistant curator, Army Medical Museum, 1909-1913, and curator, 1919-1920; professor of bacteriology, parasitology and preventive medicine and director of laboratories, Army Medical School, 1920-1922; medical inspector of the Hawaiian Department, 1922-1926; commandant and director of clinical pathology and preventive medicine, Army Medical School, 1926-1930, and assistant commandant of the Army Medical Center, 1930 to 1931, when he became professor and head of the department of tropical medicine in Tulane. He was president of the American Society of Tropical Medicine, 1914-1915, American Society of Parasitologists, 1934-1935, and the American Academy of Tropical Medicine in 1935. He is associate editor of the *American Journal of Parasitology* and editor of the *American Journal of Tropical Medicine*.

## MAINE

**State Medical Election.**—Dr. George L. Pratt, Farmington, was chosen president-elect of the Maine Medical Association at its annual meeting in Bar Harbor June 26-28 and Dr. Willard H. Bunker, Calais, was installed as president. Dr. Frederick R. Carter, Augusta, was reelected secretary.

**Society News.**—At a recent meeting of the Androscoggin County Medical Society Drs. Roland B. Moore, Portland, and Roscoe L. Mitchell, Augusta, discussed obstetrics.—Dr. Ernest Granville Crabtree, Boston, discussed recognition and management of urologic conditions before the Penobscot County Medical Society in Bangor recently.

## MARYLAND

**Dr. Katzenelbogen Goes to Washington.**—Dr. Solomon Katzenelbogen, associate professor of psychiatry, Johns Hopkins University School of Medicine, Baltimore, has been appointed director of laboratories and research at St. Elizabeths Hospital, Washington, D. C. Dr. Katzenelbogen has also been in charge of the department of internal medicine at the Phipps Psychiatric Clinic. A member of the faculty of Johns Hopkins since 1928, Dr. Katzenelbogen has, among other things, served as head of the laboratory of internal medicine, Medical Faculty, University of Geneva, and chief resident physician of the Hospital Canton, Geneva, Switzerland. He graduated in medicine at the University of Geneva in 1918. His new appointment was effective July 15.

## MICHIGAN

**State Medical Meeting in Detroit.**—The seventy-third annual meeting of the Michigan State Medical Society will be held at the Book-Cadillac Hotel, Detroit, September 19-22, under the presidency of Dr. Henry Cook, Flint. Out of state speakers before section meetings will include:

Dr. Fred W. Rankin, Lexington, Ky., A Combined Operation for Cancer of the Rectum (movie with sound effect).  
Dr. Stanley J. Seeger, Milwaukee, Treatment of Burns.  
Dr. Kellogg Speed, Chicago, Knee Joint Injuries Exclusive of Fracture.  
Dr. Frederick J. Taussig, St. Louis, Lymph Gland Removal in Cervix Cancer: Technic and Results.  
Dr. Joseph L. Baer, Chicago, Prolapse of the Uterus.  
Dr. Albert D. Ruedemann, Cleveland, Endocrine Disturbances Pertaining to the Eye.  
Dr. Oscar V. Batson, Philadelphia, The Surgical Anatomy of the Ear.  
Dr. Charles A. Aldrich, Winnetka, Ill., Management of Critical Situations in Childhood Nephritis.

Included among the speakers at the general assemblies will be:

Dr. Frank H. Lahey, Boston, Management of Surgical Conditions of the Common Bile Duct.  
Dr. Harold O. Jones, Chicago, Tubal Pregnancy.  
Dr. Joseph E. Moore, Baltimore, Syphilitic Primary Optic Atrophy.  
Dr. Henry A. Christian, Boston, Certain Cardiorespiratory Correlations.  
Dr. Ruedemann, Headaches and Head Pains of Ocular Origin.  
Dr. Aldrich, Babies Are Human Beings.  
Dr. Taussig, Common Lesions of the Vulva.  
Dr. Seeger, Treatment of Burns.  
Dr. Batson, Hearing and Deafness.  
Dr. Jacob Arnold Bargen, Rochester, Minn., Management of the Various Types of Ulcerative Colitis.  
Dr. William D. McNally, Chicago, Carbon Monoxide Poisoning.  
Dr. Franklin G. Ebaugh, Denver, Obligations of the Medical Profession in Relation to Mental Health.  
Dr. Frank E. Adair, New York, Recognition, Diagnosis and Treatment of Breast Cancer.  
Dr. John E. Gordon, Boston, Field Studies in Scarlet Fever.  
Dr. Henry F. Helmholz, Rochester, Minn., Application of Recent Advancements in Urinary Antisepsis to Private Practice.  
Dr. Russell L. Haden, Cleveland, Clinical Nutritional Deficiency Diseases.  
Dr. Speed, Unhappy Results in the Treatment of Fractures.  
Katharine F. Lenroot, Washington, D. C., Federal and State Cooperation in Maternal and Child Health Services.  
Dr. Robert D. Mussey, Rochester, Thyroid Gland and the Function of Reproduction.  
Dr. Roy R. Grinker, Chicago, Newer Methods in Neurologic Diagnosis and Treatment.  
Dr. Rankin, Recent Changes in the Teaching and Practice of Medicine.  
Dr. Horton R. Casparis, Nashville, The Tuberculosis Program and the Practice of Medicine.  
Dr. Allen Fiske Voshell, Baltimore, The Conservative Treatment of Orthopedic Conditions.  
Dr. Howard Fox, New York, Treatment of Common Diseases of the Skin.

President's Night will be observed Wednesday evening, when the Andrew P. Biddle Oration will be delivered by Dr. Haven Emerson, New York, on "Public Health the Product of Individual Preventive Medicine." The speakers at the postgraduate convocation Tuesday evening will be Drs. James D. Bruce, Ann Arbor, on "The Challenge of Medical Service" and Morris Fishbein, Chicago, Editor of THE JOURNAL, "Social Aspects of Medical Care." A conference for interns and residents Monday afternoon will be addressed by Drs. Rosco G. Leland, director, Bureau of Medical Economics, American Medical Association, Chicago, on "Value of Medical Organization to the Physician and to the Public"; Louis Fernald Foster, Bay City, "The Place of the Michigan State Medical Society in the Young Physician's Life," and James M. Robb, Detroit, "Pitfalls of the Practice of Medicine—Practical Pointers." A symposium on the business side of medicine will follow this session. Dr. Harrison H. Shoulders, Nashville, Tenn., secretary of the Tennessee State Medical Association, will address the county secretaries' conference Tuesday evening.

## MISSOURI

**Personal.**—Dr. Edwin Lee Miller, Kansas City, received a certificate of merit from the University of Missouri Alumni Association at a luncheon meeting of the Medical Alumni Association, May 3, in Jefferson City. Dr. Miller is the first person from the University of Missouri School of Medicine to receive this award, it was stated.—Dr. Richard B. Schutz, Kansas City, received the cash award presented by the committee on maternal welfare of the state medical society for the most appropriate article appearing in the state medical journal relating to obstetric care. The title of his article was "Bleeding in Pregnancy," published in September 1937. The award was presented at the annual dinner of the committee in Jefferson City May 2.—Dr. Frederick J. Taussig, professor of clinical obstetrics and gynecology, Washington University School of Medicine, St. Louis, has been appointed a member of the state cancer commission, succeeding the late Dr. Ellis



Fischel, chairman. F. T. Hodgdon, Hannibal, a member of the commission, was designated acting chairman, it is reported. —The council of the Missouri State Medical Association held a dinner in Jefferson City May 1 in honor of past presidents of the association. —Dr. Otto H. Schwarz, professor of obstetrics and gynecology, Washington University School of Medicine, St. Louis, was honored at a dinner May 21 in recognition of his twenty-five years as a teacher at the university.

## NEW YORK

**Society News.**—Drs. Arthur J. Bedell and Arthur M. Dickinson addressed the Medical Society of the County of Albany June 22 on "Fundus Signs of Constitutional Disease" and "Perforation of Carcinoma of the Stomach" respectively. —At the seventh annual interstate summer meeting of the Medical Society of the County of Chautauqua July 27 the speakers included Drs. Abraham H. Aaron, Buffalo, on "Treatment of Selected Gastrointestinal Conditions from the Viewpoint of the General Practitioner"; Karl A. Menninger, Topeka, Kan., "Contributions of Emotional Factors to Physical Disease," and Frank H. Lahey, Boston, "The Newer Developments in Surgery." —Drs. Alvin R. Carpenter and Charles M. Allaben, Binghamton, addressed the Broome County Medical Society, Binghamton, June 14, on "Fracture of Scaphoid of the Wrist" and "Club Feet" respectively.

**New "Long Range" Legislative Health Commission.**—The governor has appointed a "legislative commission on a long range health program," consisting of nine legislators and four other members. With an appropriation of \$15,000 to finance its work, the commission has been asked to work out a health program to improve and maintain the health of the people of the state. Following are members of the commission:

Senator Leon A. Fischel, New York, chairman.  
Assemblyman Lee B. Mailler, Orange County, vice chairman.  
Assemblyman Robert F. Wagner Jr., New York, secretary.  
Senator Emmett L. Doyle, Rochester.  
Senator Francis L. McElroy, Syracuse.  
Senator Joe R. Hanley, Livingston County.  
Assemblyman Warren O. Daniels, St. Lawrence County.  
Assemblyman Nathaniel M. Minkoff, Bronx.  
Assemblyman Meyer Goldberg, New York.  
Dr. Thomas P. Farmer, Syracuse, representing physicians.  
Mr. R. V. Rickard, New York, representing employers.  
Mr. Henry D. O'Connell, Rochester, representing labor.  
Miss Elsie M. Bond, New York, representing the general public.

## New York City

**Medical Exhibits at the World's Fair.**—In the news item in *THE JOURNAL*, July 30, page 457, listing the sponsors of medical exhibits at the New York World's Fair in 1939, the name of Ciba Pharmaceutical Products was inadvertently omitted. The Ciba firm is cooperating in development of the exhibit on heart disease and the exhibit on hormones. It was one of the first to assume sponsorship.

**Society Sponsors Course in Effective Speaking.**—A course in effective speaking, personality training and human relationships will be given by Augustus E. Califano under the auspices of the Medical Society of the County of Queens at the society's building, Forest Hills. An introductory session will be held Friday evening October 7, while the ten subsequent Friday evenings will be given over to the course. Additional information may be obtained from the medical society, 122 Queens Boulevard, Forest Hills.

**Changes at Rockefeller Institute.**—Appointments and promotions to take effect on or after July 1 were recently announced by the Rockefeller Institute for Medical Research. The following were promoted from associate to associate member:

Rene J. Dubos, Ph.D. Dr. Rafael Lorente de No  
Kenneth Goddard, Ph.D. John B. Nelson, Ph.D.

The following were promoted from assistant to associate:

Dr. Albert Claude William C. Price, Ph.D.  
Joseph S. Fruton, Ph.D. Dr. Charles V. Seastone Jr.  
Dr. John G. Kidd Dr. Joseph E. Smadel  
Dr. Colin M. MacLeod Philip R. White, Ph.D.

Max A. Lauffer Jr., Ph.D., was promoted from fellow to assistant. The new appointments include the following assistants:

Dr. Jorge Casals-Ariet Dr. William F. Friedewald  
Dr. Smith O. Dexter Jr. Rollin D. Hotchkiss, Ph.D.  
Dr. Thomas D. Dublin Dr. Francis H. Wright

Dr. Paul B. Beeson has been appointed resident physician at the hospital and the following have been appointed fellows:

Mr. Mark H. Adams Isabel M. Morgan, Ph.D.  
Dr. Konrad Dohrner Ernst Scharrer  
Dr. Robert S. Dow

## OHIO

**Society News.**—Dr. Eben L. Brady, Marion, was elected president of the Ohio Public Health Association at the recent annual meeting in Columbus and Dr. Charles A. Doan, Columbus, secretary. —The council of the Academy of Medicine of Cincinnati has approved the organization of a speakers' bureau to provide speakers on medical subjects for lay audiences; the committee on public relations will work out the details.

## OREGON

**State Medical Meeting at Timberline Lodge.**—The sixty-fourth annual session of the Oregon State Medical Society will be held at Mount Hood Timberline Lodge, August 24-27, under the presidency of Dr. Charles T. Swecney, Medford. The guest speakers will be:

Dr. Cyrus C. Sturgis, Ann Arbor, Mich., Coronary Artery Disease.  
Dr. Don C. Sutton, Chicago, Principles of the Treatment of Heart Disease.  
Dr. Alfred W. Adson, Rochester, Minn., Surgical Treatment of Hypertension.  
Dr. Edward C. Moore, Los Angeles, Carcinoma of the Right Colon.

Among the Oregon physicians participating in the program are:

Dr. Egon V. Ullmann, Portland, The Prevention of Recurrent Herpes.  
Dr. William Ronald Frazier, Portland, Treatment of Threatened and Habitual Abortion and Report of Two Cases.  
Drs. Fred N. Miller and Marion G. Hayes, Eugene, Streptococcal Pneumonia of Mild Severity.  
Dr. Charles D. Donahue, Eugene, Renal Tuberculosis.  
Dr. Wilbur C. Smith, Portland, Further Observations on Fractures of the Carpal Navicular.

The guests will conduct round table discussions and Dr. Vernon A. Douglas, Salem, will preside at one for health officers. Entertainment will include the twelfth annual golf tournament, horseback riding and a mountain climb.

## PENNSYLVANIA

**Society News.**—At a meeting of the Franklin County Medical Society in Chambersburg, July 19, Dr. Joseph H. Barach, Pittsburgh, spoke in the afternoon on "Underlying Principles and Treatment of Diabetes" and in the evening "A Medical Tour of South America." —At the annual meeting of the Lehigh Valley Medical Association at Pocono Manor July 21 the guest speaker was Dr. Rosco G. Leland, director of the Bureau of Medical Economics of the American Medical Association, Chicago, on "The National Health Survey and the General Subject of Medical Economics." Dr. Harvey P. Feigley, Quakertown, president of the association, gave his official address on "The Family Physician—His Future."

## Philadelphia

**Medical Officer Receives Navy Cross.**—Lieut. Clark G. Grazier, U. S. Navy, formerly of Philadelphia and now stationed at Cavite, P. I., attached to the U. S. S. *Augusta*, was honored with the Navy Cross June 30 in recognition of his conduct when the gunboat *Panay* was sunk by the Japanese last December. Lieutenant Grazier was the only physician on the boat. In a report to the Secretary of the Navy Lieut. Commander James J. Hughes said that Dr. Grazier "displayed coolness, ability and resourcefulness with his treatment of the many wounded, both while under fire aboard ship and under very difficult conditions ashore." Dr. Grazier was graduated from Jefferson Medical College in 1931.

## Pittsburgh

**Personal.**—Dr. Charles Edward Ziegler, professor of obstetrics, University of Pittsburgh School of Medicine, received the honorary degree of doctor of science at the annual commencement of Dickinson College; he graduated from Dickinson in 1896. —Mr. Harry B. Meller, managing director of the Air Hygiene Foundation of America and for many years in charge of air hygiene research at Mellon Institute, received the honorary degree of doctor of science at the University of Toledo June 13. Mr. Meller is also chief of the bureau of smoke regulation of the department of health.

## SOUTH DAKOTA

**Society News.**—Dr. John Raymond Kleyle, Omaha, addressed the Seventh District Medical Society recently in Sioux Falls on "Recent Advances in the Treatment of Lobar Pneumonia."

**Committee on Industrial Health.**—A committee on industrial health has been appointed by the council of the South Dakota State Medical Association. According to the secretary of the association, the new appointees were selected on account

of their location in the larger industrial communities of the state. Included on the committee are Drs. Raymond W. Millen, Sioux Falls; Robert J. Jackson, Rapid City, and Paul P. Ewald, Lead.

### TENNESSEE

**University News.**—Dr. Andrija Stampar, formerly chief medical officer of Yugoslavia, lectured at the Vanderbilt University School of Medicine, Nashville, recently on "Rural Health Activities in China" and "Maternal and Infant Welfare in the Soviet Union."

**Society News.**—The annual meeting of the Upper Cumberland Medical Society was held at Red Boiling Springs June 7-8. Among the speakers were Drs. William D. Haggard and James A. Kirtley Jr., Nashville, "Studies in Gallbladder Diseases Based on 841 Operations"; Thayer S. Wilson, Gordonsville, "Hypertension and Its Management"; Hernan Spitz, Nashville, "Milk Allergy"; Carl C. Howard, Glasgow, Ky., "The Value of Clinical Symptoms," and John T. Moore, Algood, "Sulfanilamide."—Dr. Cassius W. Friberg, Johnson City, addressed the Greene County Medical Society, Greeneville, June 7 on a proposed program for maternal welfare sponsored by the state medical association; Dr. Cecil B. Laughlin, Greeneville, spoke of "The Heart Case as a Surgical and Obstetric Risk."—Dr. Fred H. Albee, New York, addressed the Chattanooga and Hamilton County Medical Society June 9 on "Restoration of Blood Supply in Fractures of the Hip in Bone Graft" and "Restoration of Motion in Bony Stiff Joints."

### UTAH

**Plague Infection.**—According to *Public Health Reports*, plague infection was found in seven fleas collected May 20 from fifteen desert wood rats, *Neotoma desertorum*, shot and trapped from eleven to fourteen miles northwest of Kanab, Kane County.

### GENERAL

**Society News.**—The Central Society for Clinical Research will hold its eleventh annual meeting in Chicago at the Drake Hotel, November 4-5. Dr. Lawrence D. Thompson, 4932 Maryland Avenue, St. Louis, is the secretary.—The Clinical Orthopaedic Society will meet in Nashville October 7 and Birmingham, Ala., October 8. Dr. H. Earle Conwell, Medical Arts Building, Birmingham, is the secretary.

**Medical Art Association.**—Dr. Alfred Braun, New York, received the grand prize for the best piece of art in the first annual exhibition of the American Physicians' Art Association in San Francisco in June. Dr. Braun's work was an oil entitled "Portrait of an Italian." One hundred and ninety-six exhibitors displayed 559 pieces of art. Dr. Francis H. Redewill, San Francisco, was chosen president of the association at the recent meeting; Drs. Herbert L. Treusch, Atlanta, and Henry N. Moeller, New York, were named vice presidents; Max Thorek, Chicago, secretary, and Raleigh W. Burlingame, San Francisco, treasurer.

**Association Does Not Sponsor Promotion of Infant Health.**—Word has been received from Portland, Ore., that the Alys May Brown Production Company (no address is given) claims to represent the American Medical Association in conducting a baby health conference in conjunction with the 1938 national encampment of the U. S. Spanish War Veterans to be held at Portland September 11-15. The American Medical Association has no commercial agents for such purposes and disapproves in general such commercial promotions of infant health. For years the Association has been publishing record cards and instructions for the conduct of baby health conferences of a bona fide character. These are available only with the approval of the county medical society in the community where the conference is to be held.

**International Pharmacopoeial Commission.**—At a recent session of the Health Organization of the League of Nations an international commission was appointed to promote uniformity of standards for potent medicines. Dr. Charles H. Hampshire, London, is chairman, and members are Prof. H. Baggesgaard, Copenhagen; Prof. V. E. Zunz, Brussels; Prof. M. Tiffeneau, Paris; Prof. R. Eder, Zurich; Prof. L. Van Itallie, Leyden, and Ernest Fullerton Cook, Pharm.M., Philadelphia. A representative from Russia was also to be appointed. The commission plans to compile a list of the more important medicines used throughout the world and to invite the pharmacopoeial commissions in various countries to prepare model monographs, which when finally approved will be presented to

the pharmacopoeial commissions of the world in the hope that they may bring about uniformity in titles, definitions, descriptions, tests for identity and purity and methods of assay.

**Doctors Wanted for Service in China.**—The National Christian Council of China is appealing for six physicians at the earliest moment for war service in China. Six are asked for from the United States, four from Great Britain and two from Canada. Physicians answering the call should be unmarried, in good physical health able to endure the hardships of field service and have special experience in surgery if possible. Passage to and travel in China will be arranged. The remuneration is small, with the minimum term of service to be at least one year. The National Christian Council of China through its commission on medical work in cooperation with the several missions and the International Red Cross Committee will direct the work of physicians. The work will be almost entirely that of war relief. Inquiries should be addressed to Dr. Edward H. Hume, director, Christian Medical Council for Overseas Work, room 1109, 156 Fifth Avenue, New York.

**Tennessee Valley Meeting.**—Dr. Forrest S. LeTellier, Knoxville, Tenn., was elected president of the Tennessee Valley Postgraduate Medical Assembly at its annual meeting in Knoxville June 22-24. Vice presidents are Drs. Carlisle R. Petty, Lynch, Ky., and James F. Pate, Canton, N. C., and Dr. Jesse C. Hill, Knoxville, was reelected secretary. Among the speakers were:

Dr. Arthur E. Hertzler, Halstead, Kan., Nonsurgical Disease of the Stomach.

Dr. William H. Higgins, Richmond, Va., Medical Aspects of Neoplasms of the Lung.

Dr. Richard Kovacs, New York, Of What Use is Physical Therapy for the Private Practitioner?

Dr. David T. Smith, Durham, N. C., Diagnosis and Treatment of Pellagra with Nicotinic Acid.

Dr. William D. Haggard, Nashville, Manifestations of Gallbladder Disease, with Analysis of 841 Cases.

Dr. Arthur U. Desjardins, Rochester, Minn., Radiotherapy for Inflammatory and Malignant Conditions.

Dr. Edward Julius Stieglitz, Chicago, The Application of Renal Function Studies.

Dr. Francis C. Grant, Philadelphia, Operative Procedures for the Relief of Pain.

Dr. Louis A. Buie, Rochester, Minn., spoke at a banquet on "The Featherless Peacock."

**American Board of Plastic Surgery.**—Announcement is made of the establishment May 23 of the American Board of Plastic Surgery as a subsidiary of the American Board of Surgery. Officers are Drs. John S. Davis, Baltimore, chairman; George M. Dorrance, vice chairman, Philadelphia; Vilray P. Blair, secretary-treasurer, St. Louis. Members are Drs. James Barrett Brown, St. Louis; Robert H. Ivy, Philadelphia; Harold L. D. Kirkham, Houston, Texas; William S. Kiskadden, Los Angeles; Sumner L. S. Koch, Chicago; William E. Ladd, Boston; Gordon B. New, Rochester, Minn.; George Warren Pierce, San Francisco; Ernest Fulton Risdon, Toronto, Canada; Ferris Smith, Grand Rapids, Mich.; Jerome P. Webster, New York, and John M. Wheeler, New York. The objectives of the board are to issue a certificate of qualification to all those meeting the board's requirements of training in plastic surgery; to conduct examinations for those candidates who meet its requirements and seek its qualifications; to improve and widen the existing opportunities for the training of the plastic surgeon; to study and evaluate local and foreign teaching centers and opportunities for experience in and the study of plastic surgery. The term of membership on the board will be for six years, except in the instance of the original board's membership which shall be for six, four and two years respectively. Two types of certificates will be issued: covering the general surgical field or one or more special fields. Two groups of candidates will be recognized: those to be certified without formal examination as to professional qualification and those to be formally examined. The former will be known as Founders. This group will include those invited by the board to make application and those who, submitting their applications within two years from the date of the beginning of operation of the board, have received the approval of the examination committee, have met the requirements of the Founders group and who, at the time of the board's organization in addition to possessing satisfactory moral character and ethical standing in the profession are generally accepted as technically prepared to do work of satisfactory quality in this field. All candidates eligible for examination must possess the preliminary and basic medical qualifications accepted by the Advisory Board of Medical Specialties of the American Medical Association. The qualifying examination will be divided into Part I, written and Part II, oral and practical. Part I will deal with the theory and practice of plastic surgery in the field in which certification is asked and include questions on

the management of local and general anesthesia, shock, hemorrhage, the handling of tissues and related bacteriology and also surgical accidents. Part II will include the exhibition of patients who have undergone or are undergoing treatment; examination, diagnosis and presentation of a plan of correction by the applicant of cases provided by the examiners; oral examination of the applicant and observations made in the operating and treatment rooms and wards. The fee for Group A (Founders) will be \$25, while the fee for Group B will be \$75, \$25 to be payable on registration; \$25 for Part I and \$25 for Part II. Reexamination may be made as often as desired, provided one year elapses between examinations. The American Board of Plastic Surgery bears the responsibility of deciding who is fitted to do plastic surgery but a veto by the American Board of Surgery on any person will be either accepted by the former or made the occasion of a conference of representatives of the two boards.

### CANADA

**Canadian Medical Election.**—Dr. Frank S. Patch, Montreal, was elected president of the Canadian Medical Association at the annual meeting in Halifax in June and Dr. Kenneth A. MacKenzie, Halifax, was installed as president. The next annual session will be held in Montreal.

**British Columbia Meeting.**—The forty-sixth annual meeting of the British Columbia Medical Association will be held at the Empress Hotel, Victoria, B. C., September 15-17. Lectures by seven guest speakers will constitute the program, as follows:

- Dr. Hans Lissner, San Francisco: Maxillary Sinusitis; Clinical Observations on the Present Status of the Sex Hormone Therapy; Indications for and Prognosis of the Substance.
- Dr. Edwin G. Bannick, Seattle: Acute Peritonitis; Treatment of Severe Burns.
- Dr. William Boyd, Toronto: Pathology of the Gallbladder; Tumors of the Neck; Bacterial Infection of the Heart.
- Dr. Alton R. Kilgore, San Francisco: Treatment of Peripheral Vascular Diseases Threatening Gangrene; Extra-Abdominal Diseases Simulating the Acute Abdomen; Practical Considerations in the Handling of Acute Appendicitis and Its Complications.
- Dr. Alfred T. Bazin, Montreal: Cancer of the Breast; Cancer of the Colon and Rectum.
- Dr. Kenneth A. MacKenzie, Halifax, N. S.: Treatment of Hypertension.
- Dr. Louis H. Newburgh, Ann Arbor, Mich.: Nature and Management of Nephritic Edema.

### LATIN AMERICA

**Tuberculosis Campaign in Cuba.**—The Cuban government has appropriated a million dollars for a health program in which an intensive campaign against tuberculosis is being developed under the supervision of Dr. Wilson G. Smillie, Dr. Edgar Mayer and Morton C. Kahn, Ph.D., of Cornell University Medical College, New York. Clinics have been established in the state of Havana and in Oriente, staffed by experts in tuberculosis work, and it is planned to extend these clinics into all sections of Cuba. Adults as well as children are undergoing tuberculin tests, the survey being especially aimed at testing school children, food handlers and tobacco workers. Provision is already being made for hospitalization and treatment of those found to have tuberculosis. Renovation of L'Esperanza Hospital, near Havana, has made 800 beds available and another 800 will be furnished in a new hospital under construction in Trinidad, according to the *Bulletin of the National Tuberculosis Association*.

### FOREIGN

**Building for American Hospital in Turkey.**—Construction will soon begin on a new building to house the American Hospital in Istanbul, Turkey, which, according to the *New York Times*, will cost \$200,000 and be of reinforced concrete. It is made possible by contributions from American and other foreign residents in Istanbul, from friends of the hospital in the United States and chiefly from large American oil and tobacco companies with interests in the Near East. Rear Admiral Mark L. Bristol, retired, U. S. high commissioner to Turkey from 1919 to 1927, is president of the board of directors of the hospital in America. The director of the hospital in Istanbul is Dr. Lorrin A. Shepard, an American who was born in Aintab, Turkey, but received his medical training in American schools. The hospital, founded in 1890, has been quartered in a rented building. The new building will be in the Pera section of the city. W. Stuart Thompson, architect, New York, sailed July 16 to organize the work. The staff of physicians and interns is entirely Turkish. The Turkish government is cooperating fully with the institution because it operates a training school for twenty nurses. Under the direction of two American nurses, Turkish girls receive a three year training course and then go to government hospitals.

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

July 20, 1938.

### Annual Meeting of British Medical Association

At the 106th annual meeting of the British Medical Association, which took place at Plymouth, the president, Dr. Colin D. Lindsay, said that the credit of the general practitioner was sinking but that a reaction from that attitude was inevitable. The more the public was educated and the more health services extended into the lives of the people, the more would there be required an active and intelligent family doctor service. It would be no corps of clerks and would require a wide professional training to insure the early recognition of diseases and the proper coordination of specialized services, which were daily becoming more abundant. The amount of functional nervous diseases in the community was very large, and owing to the lack of any obvious disability, except in the later stages, it was only the general practitioner who could lead the attack. Medical psychology might well come into its own. Even now all general practitioners were to some extent psychotherapists. They would be much more effective if their training included some instruction in the principles of medical psychology. All direct contact with the public as individuals should be in the first instance through the family doctor.

At the back of the family doctor service there must be a specialist service. Medicine had grown so much that it was impossible for any one person to be proficient in every branch. However, the tendency to disserve the various organs of the body went too far. The family doctor was also a specialist, in the recognition of disease in its early stages and in helping in the many ills that beset his fellow men. The intensive search into the origin of cancer pointed to the probability that malignant growths rarely developed suddenly; there was a pre-cancerous stage, usually lasting for years, in which cancer developed from minor ailments which might have been rectified if their significance and possible danger had been recognized. More attention should be paid to minor ailments. It had been estimated that 40 per cent of all illness was due to the patient's own action. If this was true, and he had found it so, a vast amount of sickness could be avoided. This required willingness on the part of the patient to talk over his minor ailments with his physician instead of using self medication assisted by the pharmacist. The general practitioner saw the beginning of disease, the specialist mainly the end. There was no reason why one branch should from its nature be more eminent than the other. They were essentially complementary, and each required attainments of the highest order.

Only through education of the public can credulity in regard to advertised remedies be removed. Because of the superstitious ignorance of the public there had grown up an enormous advertisement literature for remedies claimed to cure not only every known disease but also diseases invented for the purpose of being "cured" by some particular remedy. This trade could flourish only with a public which knew little or nothing. The health of the nation was now much in the public eye, and unless physicians guided the enormous amount of enthusiasm that lay behind the campaign there was danger that it might do more harm than good. They should go further than that. Teaching in elementary biology, anatomy and physiology should be an essential part of all education, however elementary.

### THE PROBLEM OF REFUGEE PHYSICIANS

The political persecution in Germany and Austria has created a problem for the free countries, which was discussed at the representative meeting of the association. The number of foreign physicians admitted to the Medical Register in 1937 was

forty; twenty-eight have become members of the association. In 1938 so far the number is twenty-one. A deputation consisting of representatives of the Royal Colleges of Physicians and Surgeons, the Universities of Oxford, Cambridge and London, the British Medical Association and the Society of Apothecaries was received by the home secretary, Sir Samuel Hoare. He said that the position of physicians in Austria was lamentable and that something must be done by civilized nations to meet the emergency. The deputation felt that some gesture of humanity ought to be made by the medical profession and therefore suggested that a strictly limited number of physicians should be received after their claims had been investigated by a special advisory committee. It was also suggested that the senior men might work in laboratories supported by charitable funds and that the younger men before going into practice should be required to undergo specified training and examinations. Apprehension was expressed by some speakers at the representative meeting as to the results of admitting aliens first from one country and then from another. A strong appeal was made by one speaker on the score of humanity that refugees whose prospects had been dashed to the ground through no fault of their own should be given the privilege of going into certain British colonies to practice. The resolution was adopted "That the council be asked to give consideration to the effect on medical practice in the empire of the recent influx into this country of medically qualified aliens, and to report thereon."

#### RECOGNITION OF CHIROPODISTS

A resolution was moved rescinding one passed by the representative body in 1934 refusing official recognition to chiropodists in a more extended field than corns and callosities. It was pointed out to the representative meeting that the Incorporated Society of Chiropodists gave two years' training and that students were rigorously instructed as to the limits of their practice. They were forbidden to advertise or to use anesthetics and manipulative or operative treatment. The foot clinics were doing good work which could not be done by hospitals unless they had on their staff persons trained as chiropodists. The resolution had already been passed by the council of the British Medical Association by a large majority. They were fully alive to the difficulties; acceptance would mean departure in a small field from the principle that only those with a full medical training were capable of diagnosis. The resolution was opposed on this ground. It was pointed out that a similar claim was made by the sight-testing optician. In the sphere of diagnosis the chiropodist was to be left free, but in therapeutics the sphere was to be limited. On the other hand, it was argued that we should go on needing chiropodists and that this was an ideal opportunity to get control of their practice. The resolution was carried, as also was another requiring chiropodists to confine themselves to chiropody, which was defined as "the treatment of malformed nails and superficial excrescences occurring on the feet, such as corns, warts, callosities and bunions."

#### CONTRIBUTORY HOSPITAL SCHEMES

It was moved that as the Hospital Saving Association (which collects subscriptions from persons who may require hospital treatment) had hindered the normal development of private practice and that as similar results are likely to follow other contributory schemes the council be asked to review the whole position. The hospitals were much abused. A considerable number of the patients attending could afford to pay the fee of a general practitioner or consultant. On the other hand, it was pointed out that the Hospital Saving Association had advantages: (1) The contributors felt that they were being dealt with otherwise than by charity; (2) the family doctor could send his patient with a note to the hospital without fear that he was abusing the work of the hospital, and (3) every

voucher had on it the British Medical Association limits of income. It was argued that the outpatient departments of the hospitals should be consultative departments only. The motion was carried unanimously.

#### SYNTHETIC HORMONES

In the section of medicine Sir Walter Langdon-Brown opened a discussion on organotherapy. The cooperation of organic chemists with biologists had led to the preparation of synthetic hormones, and it had been found that simpler chemical substances than those found in nature might be adequate to produce the biologic effect. These basal groups were, in Dodd's happy phrase, "skeleton keys which can pick the physiologic lock." We were still entirely without any conception as to why a particular cell should be sensitive to a particular chemical substance or why the same substance should augment the activity of one type of cell and inhibit that of another. Evans had shown that the response of the dachshund and the sheep dog to injections of the pituitary growth hormone were entirely different. Langdon-Brown expressed the hope that research on the synthetic hormones might effect two things: (1) the discovery of simple basal groups which could produce the biologic effect and yet escape disintegration by the digestive juices and (2) material reduction in the cost of production. At present the cost was prohibitive except for the very rich and for the hospital class.

#### AIR RAID PRECAUTIONS

Dr. G. C. Anderson, medical secretary, announced that in accordance with the request of the committee of imperial defense and with the help of an emergency officer in every division of the association a register of physicians had been drawn up. It listed 80 per cent of the members of the medical profession who volunteered their services in case of national emergency. The government had asked that the register be kept up to date. In the autumn those who volunteered would be asked whether their intentions still held and whether they would absolve the association from the understanding to keep their reply secret. With permission the authorities could be supplied with the names by area and by age group of those who were willing to volunteer whether for services overseas or for air raid precautions. Mr. McAdam Eccles brought forward a motion asking for the appointment of medical committees on air raid precautions to assist municipal authorities if an emergency arose. In the event of war the younger physicians would be called up for military service, but those over 50 did not know exactly what they would have to do in case of emergency. In view of the information given by the secretary, Mr. Eccles withdrew his motion.

#### PARIS

(From Our Regular Correspondent)

July 16, 1938.

#### Monument in Memory of World War Physicians

The sanitary corps of the French army includes not only physicians but also dentists, pharmacists, nurses and other hospital aids. June 5 a monument erected at Lyons in memory of members of the corps who were killed or died while in service during the World War was dedicated by the prime minister, Mr. Daladier. A glowing tribute was paid to the work of the corps. Of 22,000 physicians practicing in France in 1914, over 18,000 were mobilized. At the time of the armistice there were 21,181 physicians in the sanitary corps. Ten per cent, or 2,108 of the physicians in service, died as the result of wounds or disease from 1914 to 1918. Of 3,821 pharmacists, 321 died; of 1,000 dentists, 142 died; of 5,238 hospital officials, 500 died; of 120,000 male nurses, 9,213 died, and of female nurses 600 died, 132 after air raids.

### End Results of Mediastinal World War Injuries

Two papers read at the meeting June 1 of the Académie de chirurgie of Paris will be of great interest to military surgeons. Prof. René Le Fort of Lille was able recently to follow up fifty-five of ninety-three cases of injury of the heart and mediastinum, which he had observed during the World War. In four of these fifty-five cases operation had not been performed. The foreign bodies which were removed included thirty-two shell fragments, twenty bullets and two hand grenade splinters. In the majority of the cases operation had been done within three months after the injury. In fifty-one the pension received had averaged only 24 per cent of the former earning power, and in those in which missiles had been extracted from the heart (six cases) it had been only 30 per cent. The proportion of excellent end results was 57 per cent for the cases in which operation had been performed and 25 per cent for those in which no extraction took place. Professor Le Fort reported a case in which a mediastinal abscess had developed sixteen years after lodgment of a shell fragment near the root of the right lung. No operation for the removal of the foreign body had been performed at the time of injury. About five days after a recent drainage of the abscess and removal of the shell fragment the patient had severe hemoptysis and died. This case illustrated the potential dangers of expectant treatment. Small foreign bodies in the wall of the heart and in the hilus of the lung are well tolerated. It is advisable not to remove them, especially from the hilus, because of the risk of uncontrollable hemorrhage. Foreign bodies which are in one of the cavities of the heart should be removed regardless of the operative risks. Large foreign bodies should always be extracted, no matter where they are located in the heart or mediastinum. In general Professor Le Fort felt that his good end results justified the recommendation that an early operation was indicated.

The second paper was by Dr. Petit de la Villéon, warmly advocating removal of shell fragments and similar bodies under radioscopic control, but he was less radical in stating the indications for operation in cases of injury to the heart. In his opinion projectiles freely mobile in the cavities of the heart as well as those embedded in the wall of the auricles and right ventricles should not be removed. In the case of projectiles in the wall of the left ventricle, only those lying near the apex should be extracted and then only if at least 6 mm. of cardiac muscle is interposed between the ventricular cavity and the projectile.

#### BERLIN

(From Our Regular Correspondent)

June 18, 1938.

#### Public Health Service for 1937

The public health department of the ministry of the interior has published its report for 1937, a few months after the close of the year. The rapid assembly of so large a body of data must have entailed a vast amount of work. In the interests of expedition a preliminary report was issued, in which the more important observations are summarized; a few of these are herewith cited.

The number of marriages has increased ever so slightly, although the less numerous "war baby group" are now reaching the marriage age. The increase in the natality appears at present to have come to a standstill; a particular decline was conditioned by the influenza epidemic in the winter of 1936-1937. The number of births of second children has further increased by from 7,000 to 8,000 and the number of births of third children by from 5,000 to 6,000. The mortality seems to have remained on the whole fairly stationary during 1937, despite a manifest decline in the number of deaths from several specific causes. This constancy of the mortality is to be evaluated as a noteworthy advance, since it signifies an increase in the numbers of the higher age groups. The number of

persons over the age of 60 increases yearly by more than 200,000; the proportion of this group to the population of the reich increases yearly by around 2 per thousand. Nursing mortality as well as the number of stillbirths has declined somewhat further. The fluctuations observed in the various causes of death among nurslings are interesting. In table 1 are set forth the number per thousand of living births and of deaths from various causes in the first year of life in the larger German cities.

TABLE 1.—Causes of Death

Year	Premature Birth	Non-viability	Premature Birth and Nonviability Combined	Endo-enteritis	Syphilis
1935	16.62	16.46	33.58	5.90	0.58
1936	17.21	15.83	33.04	5.41	0.31
1937	16.87	15.13	32.00	5.72	0.21

Fatal syphilis of nurslings has become rare; its steady decline points to a recession of syphilis among mothers and among the population as a whole. A principal factor in the decline of nursing mortality is the diminution in the number of deaths from premature birth and nonviability (including malformations and obstetric accidents). Except in 1934 a decline of this type of early mortality formerly contributed scarcely at all to the decline of nursing mortality in general.

The figures for infectious diseases of childhood are also of interest. Those for the larger German cities are summarized in table 2.

TABLE 2.—Fatalities from Various Diseases of Childhood

Year	Diphtheria	Scarlatina	Measles	Whooping Cough
1935	2,369	342	337	320
1936	2,340	359	294	789
1937	1,800	290	274	488

Statistics for the entire reich on diphtheria and scarlatina are shown in table 3. After a progressive increase over several years, the incidence reached a high point in 1936 and declined during 1937, although the decrease in the number of cases of diphtheria was slight indeed. At the same time the mortality from both diseases underwent a decline in 1937 which was especially evident in the larger cities. The end of the year, however, brought with it an increase in these infections which surpassed the corresponding figures for the end of 1936.

TABLE 3.—Statistics for Diphtheria and Scarlatina

Year	Diphtheria			Scarlatina		
	No. of Cases	Morbidity per 10,000 of Population	Mortality per 100 Cases	No. of Cases	Morbidity per 10,000 of Population	Mortality per 100 Cases
1936	132,930	19.9	4.4	111,648	16.7	0.72
1936	147,629	22.0	3.8	123,874	18.5	0.72
1937	146,733	21.8	3.7	117,544	17.5	0.70

The incidence of acute anterior poliomyelitis has increased. The number of cases reported was 2,080 in 1935, 2,256 in 1936 and 2,723 in 1937. The morbidity per 10,000 of population rose from 0.31 to 0.40. The mortality per hundred cases amounted to 8.8 in the year 1935, 9.5 in 1936 and 11.9 in 1937. In the epidemic year 1932, nearly 4,000 cases were reported. The mortality from tuberculosis, which has shown an almost uninterrupted recession for many years, continued to decline during the past few years in the larger cities of Germany. In 1937 the rate was 6.9 per 10,000 of population, a new all time low. This recession has to do chiefly with pulmonary



tuberculosis. Statistics on lupus are now for the first time officially reported; the number of cases in the reich was 1,042; namely, 0.15 per 10,000 of population.

The incidence of typhoid, on the decline for several decades, increased slightly during 1937 (3,051 cases, against 2,894 in 1936), but this may be regarded as of no significance. Only the morbidity increased, not the mortality. The incidence of paratyphoid has in recent years approximated that of typhoid (about 3,000 cases annually). Conversely, the paratyphoid mortality (from 3 to 4 per cent) is only one third that of typhoid (the latter is from 10 to 11 per cent). The influenza morbidity was only 1.3 per 10,000 of population, against 1.9 in the year 1936 and 1.6 in 1935. Ninety cases of anthrax were reported as against sixty-eight in 1936. Twenty-two persons were taken ill with psittacosis, six of them fatally (as against fifty-three cases and eleven fatalities in 1936). No cases were reported of rabies, cholera, typhus, plague, smallpox or trichinosis. An increase was noted in the number of persons dying of cancer, diabetes, apoplexy and paralysis, heart disease and senile debility.

The incidence of suicides has remained unchanged (about 6,200 yearly). The number of accidental deaths per 10,000 of population has increased from three in the year 1935 to 3.3; namely, from 6,142 to 6,851. Chiefly responsible for the last-mentioned circumstance is the increase in the number of industrial plants and not the greater motorization of traffic; in fact, the number of street traffic accidents decreased in 1937.

The general state of national health and nutrition was considered satisfactory. There are a few exceptions, however. It is reported, for example, that because the peasants of Bavaria are reluctant to take advice and distrustful of the modern methods of nutrition, there is still a high incidence of nutritional disturbances, partly of a serious nature, among the nurslings of the region. Repeated reference is made to the dangers inherent in the increasing misuse of tobacco by the youth. The housing shortage has become exacerbated, owing to the immigration into industrial areas and the utilization of existing buildings for other than residential purposes. In particular there is a lack of dwellings of the smaller and smallest sizes, and many persons are still housed in structures such as barracks and shanties. The number of abortions declined during 1937.

At the end of 1937 there were 744 health departments in the German reich; of these, 655 were classed as federal boards under a national director, fifty as communal under a national director and thirty-nine as communal under a communal director. There were ninety-five special departments of eugenics and racial hygiene and twenty-seven bureaux devoted to other special fields. There were 22,265 persons in the employ of health departments, 10,701 (48 per cent) of them full time employees. About one third of the total personnel and more than one half (56.5 per cent of the full time personnel were women). Altogether 7,218 physicians were in the service of health departments. They serve as specialists in a great diversification of fields, principally pulmonary diseases, pediatrics, orthopedics, dermatology and venereology.

Advice with regard to marriage was dispensed to about 450,000 persons; namely, about 36 per cent of persons contracting marriage. About 30 per cent of all persons marrying received a governmental subsidy. Advice was dispensed to about 95,000 pregnant women; namely, about 7 per cent of the total. The number of special welfare centers for nurslings and young children was about 16,000. Advice was given with regard to the care of 1.25 millions of nurslings. More than 500,000 infants were entrusted to the health services. There were 276 school physicians on full time service and 4,477 not on full time. About 3.25 millions of school children underwent group physical examination. There were 5,146 school dentists (191 on full time, 4,955 not on full time). The health depart-

ments operated 1,477 special antituberculosis centers, as well as 456 similar establishments; these centers advised 1.25 millions of persons and made roentgenoscopic studies of an equal number and roentgenograms of 190,000. They sent 45,000 patients to sanatoriums and more than 14,000 to hospitals. The advisory centers for patients with venereal disease were 814 in number and dispensed advice to 200,000 persons. There were 420 advisory centers for orthopedic cases, at which 170,000 persons sought advice. There were twenty-four special advisory centers for patients with cancer and 285 other centers at which such patients received advice; 12,000 persons passed through these centers.

## AUSTRALIA

(From Our Regular Correspondent)

June 29, 1938.

### State Medicine in New Zealand

New Zealand is at present in the throes of working out a health insurance scheme to cover every member of the community. This scheme when it becomes law will mean the control of the medical profession by the state. To appreciate the medical situation in New Zealand, it is necessary to be acquainted with the general political background. New Zealand has been described as a totalitarian democracy. The declared policy of the present labor government is socialistic. As soon as it took office in 1935, legislation was introduced to give effect to election promises of increased wages and shorter hours and to lay the foundations for a completely socialistic state. Railways, public works, post and telegraph services, the police departments, electric power and all transport are now administered by the government. State control of the whole of the dairying industry has been established, housing schemes have been instituted, the national radio service has been placed completely under the control of a minister for broadcasting, and the establishment of a state iron and steel industry has just been authorized. For the government to complete its promises, it remains for it to introduce a national health insurance and superannuation bill before the next election, at the end of this year. The proposals are now being considered by a special parliamentary committee.

The scheme will be universal and will include dependents as well as wage earners, irrespective of income. At first only general practitioner and maternity services will be provided. Specialists and consultants will be brought in at a later date. General practitioners on the whole are enthusiastic about the scheme but specialists are opposed to it. The official criticisms of the British Medical Association in New Zealand are directed chiefly against the universal nature of the plan. To a socialist government, however, it is fundamental that a scheme should provide equal service for everybody. Only in this way can the division of patients into two classes be abolished, thus enabling doctors to give of their best to every one, without keeping an eye on the bank balance. The new schemes are to be financed partly by an increase in the wages tax of eightpence to 1 shilling in the pound, and what is now known as the unemployment tax will become the social security contribution. This will be subsidized on a pound for pound basis out of general government funds. At present it appears that some difficulty has been encountered in the progress of the scheme. This is probably financial rather than medical. Many people in New Zealand doubt the workability of the plan, and the actuary who carried out the preliminary calculations, now convinced of the inability of the scheme to function successfully, has resigned his position and left New Zealand.

### Free Medical Service for Tasmania

Tasmania is experimenting in the formation of a state medical service which is freely available to all. Local authorities have been so impressed with the scheme that, in addition to the eight districts where it has been decided to place state

physicians, many other areas are negotiating with the government for a similar provision. The first physician appointed took up duties March 1. The original proposal provided for placing physicians in districts remote from medical aid, but in view of the fact that in many districts the administration of the local public health services was very casual the government decided to utilize the services of these as public officers. The state physicians to be located in these districts will be officers of the public health department and subject to its control. Each appointment carries a salary of from £600 to £850 per annum, according to the duties of the office and the area to be served, a house allowance of £50 per annum, and a gratuity subject to satisfactory service of £50 per annum payable at the termination of three years. Officers will be allowed one month's leave annually for a hospital refresher course and one month's annual leave on full pay.

The duties of the district health officers will include investigations into problems of sanitation, control of infectious diseases, regular and systematic inspection of all school children, control and protection of food supplies, supervision of private hospitals, the work of industrial hygiene and education of the public in the principles of public health and personal hygiene. Medical services will be free to all between specified hours at the physician's place of location and on his visiting days at various centers of population in the district. Except for his consulting hours at his place of residence and his visiting days to other centers, he will be permitted to charge and retain a consulting fee and to charge at the rate of sixpence per mile for motor car mileage. In the absence of such charges it is felt that free medical service would be abused by certain of the community. Medical attendance in maternity cases will also be free if patients are confined in either a private maternity home or a bush nursing hospital. If a district in which a physician is placed possesses either of these facilities and the patient does not utilize them, she shall be required to pay a fee for medical attendance, the object being to encourage mothers to utilize the hospital services in the interests of maternity and child welfare. Local committees of three will be constituted as a connecting link between the department and the local authority.

#### Placental Infection During Induced Labor

The many reports in the literature of *Bacillus coli* infections of the newborn and the frequency with which infection of the placenta by coliform organisms is associated with stillbirth and neonatal death have led Penfold and Butler of the Baker Institute of Medical Research, Melbourne, to believe that such infections of the newborn frequently arise from the contaminated placenta while the fetus is still in utero. They consider, moreover, that the surgical induction of labor may be important in such occurrences. They have reported the results of the bacteriologic examination of 114 placentas; in forty-six cases labor had been induced with the rectal tube, and in the remainder surgical induction had not been practiced. Placental infection was detected 2.5 times more often in the cases of surgical induction than in the other cases. More striking still was the difference in the nature of the infection. In the cases of tubally induced labor, *B. coli*, aerobic nonhemolytic streptococci and *Bacillus welchii* in the placenta were common. Mixed infections were also frequent. In cases of normal labor the placentas did not show any organisms of a characteristic fecal type, nor did they show any mixed infections. A prolonged interval between the induction of labor and the delivery of the child was found to increase the risk of infection of the placenta. Infection does not appear to be dependent to any great extent on the maternal condition or on the age of the fetus.

A high correlation was noted between placental infection and death of the child, mixed infections of the placental tissue and infections of the large fetal vessels of the placenta being especially serious for the infant. When the child was stillborn or

died within ten days of birth, cultures similar to those made from the placenta were made from the heart's blood, spleen and lung and occasionally from the liver. Bacteria cultivated from these tissues were usually similar to those obtained from the placenta. When additional organisms are present in the fetus, their source is probably an infected liquor amnii. When *B. coli* was found in the placenta and in the body of the dead infant, the strains isolated were shown to be biochemically and serologically identical, suggesting a single disease process. A high correlation was observed between placental infection and maternal morbidity.

### Marriages

WILBUR DEXTER JOHNSTON, New Haven, Conn., to Miss Susan Elizabeth Merritt of Americus, Ga., July 23.

CLARKE PAUL PENNINGTON, Vanceburg, Ky., to Miss Marjorie Marie Burns of Chattanooga, Tenn., recently.

ROBERT OWEN CANADA JR., Charlottesville, Va., to Miss Julia Dent Salter of Anniston, Ala., in July.

CARROLL VANCE WILLIS, Morehead City, N. C., to Miss Norma Lucile Askew at Snow Hill, June 5.

FLORENCE SULLIVAN HASSETT, Elmira, N. Y., to Miss Eleanor Rosalie Bingham at Saranac Lake in July.

GEORGE WILLIAM HERLITZ, Corona, N. Y., to Miss Muriel Kingdon Hellwig of Elmhurst, June 27.

FRANCIS BURTON BLACKMAR, Columbus, Ga., to Miss Elizabeth Ann Standard of Tignall, July 10.

ROBERT PEYTON VINCENT JR., Yazoo City, Miss., to Miss Jane Haas of New Orleans, July 20.

JAMES WILLARD COOMBS, Camden, Ohio, to Dr. CHARLOTTE M. JOHNSON of Cincinnati, June 11.

GLEA VAUGHN STANTON, Limestone, Tenn., to Miss Cleo Dell Johnson of Memphis, July 17.

HAROLD LAWTON ROGERS, Albertville, Ala., to Miss Frances McKenzie in Fulton, Ky., in July.

JOHN WILLIAM BICK, New Orleans, to Miss Minnie Martha Walters in Biloxi, Miss., July 1.

KENNETH FRANKLIN HUGHES, Irving, Ill., to Miss Edna Doris of Mattoon, Ill., June 14.

THOMAS L. DOYLE, Philadelphia, to Miss Elizabeth Emerson of Bala-Cynwyd, Pa., July 5.

FRANK THOMPSON, Tanta, Egypt, to Miss Helen Day of East Orange, N. J., in July.

WILLIAM BRUCE NELSON, Fairfield, Ala., to Miss Edith Monroe of Marvel recently.

JAMES MAXEY DELL, Gainesville, Fla., to Mrs. Rose H. Eddins of New York, July 6.

MAURICE H. WEINSTEIN, Middletown, Ohio, to Miss Mary L. Morrill of Oxford in July.

JAMES WESLEY MCKINNEY to Miss Eleanor Trezevant, both of Memphis, Tenn., July 20.

JOHN J. McDONOUGH to Miss Marie Alberta Nelson, both of Youngstown, Ohio, in July.

LA VERNE WILSON SWIGERT, Boston, to Miss Marjorie Helm of Evanston, Ill., July 23.

HOMER LAMAR HOWARD to Miss Dela Inez Bailey, both of Winona, Miss., in June.

ALEXANDER BRADFIELD, Detroit, to Miss Elda Mae Reese of Seaside, Ore., in July.

LYNN W. WHEELCHER to Miss Margaret A. Peters, both of Miami, Fla., June 18.

ALONZO LEE BEST, Newport, Ark., to Mrs. Norma Masters of Jonesboro, July 1.

ROBERT D. BICKEL, Roanoke, Va., to Miss Louise Bigouy of Baltimore in June.

RUBEN B. BAUGH, Polkville, Miss., to Miss Flora Walrod in Raleigh, July 17.

MILTON M. ABELES to Miss Dorothy Cohen, both of New York, July 23.

BORIS PETROFF to Miss Ruth Gibbons, both of New York, July 25.

ZACHARY A. BLIER to Miss Evelyn Nauman, both of Chicago, July 7.

## Deaths

**Frank Douglas Phinney** ☉ Cincinnati; University of Pennsylvania Department of Medicine, Philadelphia, 1899; member of the American Academy of Ophthalmology and Oto-Laryngology; fellow of the American College of Surgeons; on the staffs of the Bethesda Hospital and the Children's Convalescent Home of the Cincinnati Orphan Asylum and the St. Anthony Hospital, International Grenfell Foundation, Newfoundland; aged 64; died, May 30, of arteriosclerotic heart disease.

**Robert Effinger Cumming** ☉ Detroit; Columbia University College of Physicians and Surgeons, New York, 1917; member of the American Urological Association; fellow of the American College of Surgeons; aged 43; on the staffs of the Receiving Hospital, Grace Hospital, St. Joseph's Mercy Hospital, Highland Park General Hospital, the United States Marine Hospital and the Charles Godwin Jennings Hospital, where he died, June 23, of cirrhosis of the liver.

**Joseph Pomeroy Widney**, Los Angeles; Toland Medical College, San Francisco, 1866; also a minister; member of the California Medical Association; Civil War veteran; a founder and past president of the College of Medicine of the University of Southern California and dean and professor of medicine on its faculty for many years; was a member of the state board of health; for many years member of the city board of education; aged 96; died, July 4.

**Wendell Stewart** ☉ East St. Louis, Ill.; Washington University School of Medicine, St. Louis, 1930; member of the Radiological Society of North America; on the staffs of the Christian Welfare Hospital and St. Mary's hospitals, East St. Louis, and St. Elizabeth's Hospital, Belleville; aged 34; died, June 6, in the Barnes Hospital, St. Louis, following an operation for removal of a brain tumor.

**James William Roberts**, Atlanta, Ga.; Atlanta College of Physicians and Surgeons, 1913; member of the Medical Association of Georgia; assistant professor of clinical surgery at the Emory University School of Medicine; served during the World War; aged 52; on the staffs of the Crawford W. Long Hospital and the Emory University Hospital, where he died, May 4, of carcinoma of the lungs.

**John Raymond Lehmann**, Dallas, Texas; University of Pennsylvania Department of Medicine, Philadelphia, 1911; member of the State Medical Association of Texas; emeritus professor of therapeutics at the Baylor University College of Medicine; aged 58; died, May 30, in the Baylor Hospital, of cardiac decompensation, hypertension and left hemiplegia.

**Josiah Travilla Bunting**, Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1894; assistant in otology, 1920-1924, and later instructor, Medico-Chirurgical College, Graduate School of Medicine, University of Pennsylvania; veteran of the Spanish-American and World wars; aged 69; died, May 31, of cerebral hemorrhage.

**John William McConnell**, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1900; member of the Illinois State Medical Society; on the staff of St. Anne's Hospital; aged 64; died, May 10, in the Sacred Heart Sanitarium, Milwaukee, of coronary thrombosis.

**Davidson Ker Texada**, Alexandria, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1897; member of the Louisiana State Medical Society; formerly mayor; on the staff of the State Colony and Training School; aged 59; died, May 26, of coronary thrombosis.

**Amos Carter**, Indianapolis; Indiana Medical College, Indianapolis, 1878; member of the Indiana State Medical Association; at one time superintendent of the Indiana State Sanatorium, Rockville, and the Indiana Boys School Hospital, Plainfield; aged 85; died, May 30, of chronic myocarditis.

**William R. Newton** ☉ Cameron, Texas; Memphis (Tenn.) Hospital Medical College, 1899; past president of the Milam County Medical Society; state senator; fellow of the American College of Surgeons; part owner of the Cameron Hospital; aged 64; died, May 21, of coronary thrombosis.

**Charles Lee Bailey**, Hudson Falls, N. Y.; New York Homeopathic Medical College, New York, 1891; member of the Medical Society of the State of New York; veteran of the Spanish-American and World wars; aged 68; died, May 8, in a hospital at Albany of pneumonia.

**William L. Starr**, New Albany, Ind.; University of Louisville (Ky.) Medical Department, 1881; member of the Indiana State Medical Association; formerly county coroner and secretary of the city board of health; aged 79; died, June 4, of chronic myelitis and myocarditis.

**Gabriel Eugene Tenaglia**, Honey Brook, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1929; member of the Medical Society of the State of Pennsylvania; aged 33; died, June 10, in the Bryn Mawr (Pa.) Hospital, of carbon monoxide poisoning.

**Amzi Weaver**, New Albany, Ind.; Kentucky School of Medicine, Louisville, 1904; member of the Indiana State Medical Association; formerly superintendent of county schools; aged 64; died, June 6, of hypostatic pneumonia and cerebral embolus.

**George L. Hume**, Sherbrooke, Que., Canada; McGill University Faculty of Medicine, Montreal, 1898; fellow of the American College of Surgeons; surgeon to the Sherbrooke Hospital; aged 69; died, May 30, of coronary thrombosis.

**Henry Hulse Seibert**, Davis, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1907; aged 70; died, May 1, in the Evangelical Hospital, Freeport, of heart disease and pneumonia.

**Prince Wolverton Byrd**, Salem, Ore.; Willamette University Medical Department, Salem, 1911; on the staff of the Salem State Hospital; aged 53; died, May 30, in the Salem General Hospital of coronary thrombosis.

**Fred Colman Nichols** ☉ Santa Monica, Calif.; St. Louis University School of Medicine, 1904; on the staff of the White Memorial Hospital, Los Angeles; aged 56; died, May 27, in Glasgow, Scotland, of acute meningitis.

**Austin F. Robinson**, Baltimore; Southern Homeopathic Medical College, Baltimore, 1903; on the staff of the Union Memorial Hospital; aged 67; died, May 15, in Ruxton, Md., of lymphosarcoma and bronchopneumonia.

**Thomas Aaron Klingensmith**, Jeannette, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1890; member of the Medical Society of the State of Pennsylvania; aged 73; died, May 27, of cerebral hemorrhage.

**Carl Emil Becker** ☉ Philadelphia; Temple University School of Medicine, Philadelphia, 1912; formerly on the staff of the Lankenau Hospital; aged 76; died, May 9, of injuries received in an automobile accident.

**Cortlandt William Dawe**, Forest Hills, N. Y.; Cincinnati College of Medicine and Surgery, 1901; served during the World War; aged 56; died, April 1, in the Lewistown (Pa.) Hospital of pulmonary edema.

**Thomas Cleaborn Bullock**, Autryville, N. C.; College of Physicians and Surgeons, Baltimore, 1885; member of the Medical Society of the State of North Carolina; aged 74; died, May 27, of heart disease.

**Harley Emmett Keyes**, Pasadena, Calif.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905; aged 61; died, May 22, of poison, self administered.

**Charles Wesley Reed** ☉ Grand Junction, Colo.; American Medical College, St. Louis, 1905; on the staff of St. Mary's Hospital; aged 62; died, May 31, in St. Anthony Hospital, Denver, of coronary thrombosis.

**Henry C. Smith**, Hackensack, N. J.; New York Homeopathic Medical College, New York, 1874; aged 85; died, June 6, in the Hackensack Hospital of pulmonary edema following strangulated hernia.

**Henry Franklin Staples**, Cleveland; Cleveland University of Medicine and Surgery, 1896; on the staff of the Huron Road Hospital, East Cleveland; aged 68; died, May 26, of retroperitoneal sarcoma.

**David H. Oliver**, Bridgeton, N. J.; Jefferson Medical College of Philadelphia, 1888; member of the Medical Society of New Jersey; aged 83; died, May 2, of cerebral hemorrhage and arteriosclerosis.

**Charles Sylvester Mellen**, Peoria, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903; aged 58; died, May 25, of chronic myocarditis.

**William Hackett Hines** ☉ Kansas City, Mo.; University Medical College of Kansas City, Mo., 1912; aged 53; on the staff of St. Luke's Hospital, where he died, May 26, of cerebral hemorrhage.

**Donald Wolpert Ward**, Denver; University of Colorado School of Medicine, Denver, 1931; on the staff of the National Jewish Hospital; aged 34; died, May 18, in a local hospital of pneumonia.

Ellen Harris Heise, Huntington Park, Calif.; Northwestern University Woman's Medical School, Chicago, 1887; aged 90; died, April 13, of bronchopneumonia and arteriosclerosis.

Lloyd Moffitt @ Yakima, Wash.; University of Pennsylvania School of Medicine, Philadelphia, 1909; served during the World War; health officer; aged 53; died, May 2, of gastric carcinoma.

Charles Fischer Nall, Birmingham, Ala.; Meharry Medical College, Nashville, Tenn., 1918; aged 48; died, May 8, in the Provident Hospital, Chicago, of hypertension and nephrosclerosis.

Louis Max Turbin, Chicago; Chicago Homeopathic Medical College, 1891; aged 80; died, May 9, in the Ravenswood Hospital of injuries received when he was struck by a street car.

Allen J. Mason, Friendsville, Md.; Jefferson Medical College of Philadelphia, 1884; district school trustee and at one time mayor; aged 80; died, May 30, of coronary occlusion.

Lola Delores Clark Mighell Kenderdine, Des Moines, Iowa; State University of Iowa College of Medicine, Iowa City, 1894; aged 67; died, May 11, of coronary heart disease.

Joseph A. Harper, Wellston, Ohio; Columbus Medical College, 1892; formerly member of the city board of education; aged 78; died, May 19, of acute dilatation of the heart.

Joel Carl Dodson, Carthage, Miss.; Chattanooga (Tenn.) Medical College, 1905; Mississippi Medical College, Meridian, 1907; aged 57; died, May 15, of cerebral hemorrhage.

Xavier Dodel, San Francisco; Ludwig-Maximilians-Universität Medizinische Fakultät, München, Bavaria, Germany, 1882; aged 83; died, May 1, of coronary thrombosis.

Arthur Samuel Cornell, Grand Rapids, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1897; aged 65; died, May 28, of coronary thrombosis.

John Q. A. Clowes, Shelby, Ohio; Philadelphia University of Medicine and Surgery, 1869; aged 93; died, May 24, of organic heart disease and gangrene of the left foot.

Bertram Cameron Blackhall, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1935; intern at the Toronto General Hospital; aged 28; died, June 8.

Clinton Homer Day, Clarksville, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1900; aged 61; died, May 15, of cerebral hemorrhage and heart disease.

Henry A. Schneider, Owatonna, Minn.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1901; aged 61; died, May 7, of coronary sclerosis.

William E. Krumstiek, Granite City, Ill.; Hahnemann Medical College and Hospital, Chicago, 1891; aged 78; died, May 24, of myocarditis and mitral stenosis.

Thomas Frank Miles, Lorena, Texas; Tulane University of Louisiana Medical Department, New Orleans, 1884; aged 80; died, May 7, of carcinoma of the kidney.

Chalmers Craig, Johnstown, Pa.; Western Reserve University Medical Department, Cleveland, 1900; aged 67; died suddenly, April 5, of cerebral hemorrhage.

Stuart M. Yancey, Gainesville, Fla.; College of Physicians and Surgeons, Baltimore, 1886; aged 73; died, May 20, of arteriosclerosis and cerebral hemorrhage.

Jessie F. Buckley Ogden Seger, Wichita, Kan.; Keokuk (Iowa) Medical College, 1892; aged 76; died, May 24, in a local hospital of arteriosclerotic heart disease.

John Bell Fraser, Toronto, Ont., Canada; Trinity Medical College, Toronto, and Queen's University Faculty of Medicine, Kingston, 1888; aged 82; died, May 25.

George W. Toney, Piedmont, Mo.; St. Louis Medical College, 1880; member of the Missouri State Medical Association; aged 83; died, May 15, of heart disease.

Patrick S. Humphrey, Ashland, Ky.; University of Louisville Medical Department, 1891; aged 69; died, May 10, of arteriosclerosis and pernicious anemia.

William S. Williamson, Galesburg, Ill.; Jefferson Medical College of Philadelphia, 1889; Civil War veteran; aged 91; died, May 20, of cerebral hemorrhage.

James Henry Hatfield, Indianapolis; Hospital College of Medicine, Louisville, Ky., 1897; aged 64; died, May 10, of myocarditis and cerebral hemorrhage.

John Bell Dinsmore, Hillsboro, Ore.; University of Oregon Medical School, Portland, 1910; served during the World War; aged 55; died, May 5, of myocarditis.

Elisabeth Dehn Bayer, Agnew, Calif.; Northwestern University Woman's Medical School, Chicago, 1898; aged 70; died, May 26, of carcinoma of the uterus.

Erle W. Horswill, Palo Alto, Calif.; Eclectic Medical Institute, Cincinnati, 1908; aged 55; died, May 25, of lethargic encephalitis and bronchopneumonia.

Edward James Comerford, Pittsburgh; National Medical University, Chicago, 1909; also a pharmacist; aged 57; died, May 20, of cerebral hemorrhage.

Preston Theodore Rhoads, Howell, Tenn.; Vanderbilt University School of Medicine, Nashville, 1890; aged 75; died, May 7, of cerebral hemorrhage.

Elmer Thomas Davis, Modesto, Calif.; University Medical College of Kansas City, Mo., 1903; aged 70; died, May 9, of arteriosclerotic heart disease.

Aris D. N. Whitley, Monroe, N. C. (licensed in North Carolina in 1897); aged 63; died, May 31, in a hospital at Charlotte of aplastic anemia.

John H. Goggins, Jacksonville, Fla.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1916; aged 58; died, May 12, of diabetes mellitus.

William M. Smith, Van Wert, Ohio; Columbus Medical College, 1880; formerly deputy postmaster; aged 80; died, May 14, of cerebral hemorrhage.

Franz Emory Solier @ Bryan, Ohio; Long Island College Hospital, Brooklyn, 1907; aged 53; died, May 4, in a hospital at Toledo of acute hepatitis.

Esaia Nordgren, Des Moines; College of Physicians and Surgeons, Keokuk, Iowa, 1898; aged 68; died, May 17, of carcinoma of the left lung.

Duncan D. McCallum, New Dayton, Alta., Canada; University of Toronto Faculty of Medicine, Toronto, Ont., 1896; aged 71; died, May 6.

James William Webb, Hedley, Texas; Memphis (Tenn.) Hospital Medical College, 1903; aged 55; died, April 15, of coronary thrombosis.

Robert Richey, Hollister, Calif.; Marion-Sims College of Medicine, St. Louis, 1892; aged 71; died, April 1, of acute coronary thrombosis.

James L. McDowell, Central City, Ky.; Louisville Medical College, 1890; formerly mayor; aged 78; died, May 7, of cerebral hemorrhage.

John Ferrell Wood, Manitou, Man., Canada; Manitoba Medical College, Winnipeg, 1914; aged 52; died, May 7, of coronary thrombosis.

Kate Frances Ozmun Phillips, Shaker Heights, Ohio; Cleveland Medical College, 1893; aged 66; died, April 16, of cerebral hemorrhage.

Aaron Welch Edmiston, Omaha; Rush Medical College, Chicago, 1880; aged 81; died, May 29, of coronary thrombosis and arteriosclerosis.

Charles Hugh Wilcox, Fitzgerald, Ga.; Atlanta College of Physicians and Surgeons, 1901; aged 63; died, May 17, of coronary occlusion.

Gaston Edward Dudley, New Bern, N. C.; Meharry Medical College, Nashville, Tenn., 1928; aged 38; died, May 15, of cardiorenal disease.

Thomas Spotuas Burwell, Philadelphia; Jefferson Medical College of Philadelphia, 1907; aged 61; died, April 19, of coronary embolus.

James J. Upshaw, Hartsville, Tenn.; University of Louisville (Ky.) Medical Department, 1878; aged 80; died, May 7, of pernicious anemia.

Jesse Benjamin Manor, La Center, Ky.; Missouri Medical College, St. Louis, 1882; aged 83; died, May 20, of carcinoma of the prostate.

Roy Carlton Glann @ Bronson, Iowa; Sioux City College of Medicine, 1905; aged 59; died, May 24, of carbon monoxide poisoning.

Walter W. Fugitt, St. Petersburg, Fla.; Kentucky School of Medicine, Louisville, 1892; aged 72; died, May 13, of coronary occlusion.

Charles H. Martin, Baltimore; University of Denver Medical Department, 1885; aged 77; died, May 13, of chronic nephritis.

Arthur Thaddeus Perry, Camden, Tenn.; Mississippi Medical College, Meriden, 1910; aged 58; died, May 11, of heart disease.

Morgan M. Lane, Harviell, Mo.; Missouri Medical College, St. Louis, 1882; aged 80; died, May 4, of cerebral hemorrhage.

Alexander M. Tait, Blakesburg, Iowa; Keokuk Medical College, 1892; aged 86; died, May 28, in Wapello of senility.

## Correspondence

### NOMENCLATURE IN ACUTE POLIOMYELITIS

*To the Editor:*—The simple diagnostic term "poliomyelitis" (meningo-encephalopolyomyelitis) fails to portray different forms of a disease notable for the extreme variability of its clinical appearance. Recently the modifying terms "abortive," "non-paralytic," "preparalytic" and "paralytic" have been employed to designate the stage or severity of the disease. These terms are also vague and confusing. A diagnosis of "abortive" poliomyelitis is presumptive, without means of confirmation. Even if the virus is found in the nasopharynx or rectal washings in such "abortive" cases, it is still only an assumption that the virus was the causative agent of the indefinite illness, since healthy carriers have been described. The term "preparalytic" is objectionable because it conveys the idea that paralysis would inevitably ensue. Statistical studies have disclosed that such an outcome is not the rule. To avoid the use of "preparalytic," the term "nonparalytic" has been proposed. The term "non-paralytic" cannot be applied to an acute case of poliomyelitis because the development of paralysis, while not the rule, is only too frequent an outcome. Although the term "paralytic" is least objectionable, it too loses its value and is inaccurate as it is used at present to describe all cases with clinical motor involvement, from slight to extensive paralysis.

The term "epidemic poliomyelitis" should be definitely reserved to designate a disease produced by a distinctive virus. We recognize a definite clinical picture, which is correlated with the degree and extent of pathologic alterations in the spinal cord. The clinical diagnosis of "poliomyelitis" at present is based on (a) the prodromal signs and symptoms, which include headache, neck and back rigidity, and so on and (b) confirmatory and characteristic spinal fluid manifestations, which may or may not be associated with (c) muscle weakness or paralysis. The term "poliomyelitis" fails to convey any information other than the diagnosis, because of the fact that the disease is so variable.

The requirements of an ideal classification are to convey both an accurate picture of each case and the prognosis. The only method of accomplishing such an aim in this disease is by careful muscle examination and observations on the stage of the illness. We therefore propose the following classification for acute cases of poliomyelitis:

Stage	Degree	Extent
Early } acute poliomyelitis	without paralysis	of extremity and muscle groups involved
Late }	with slight paralysis	
	with moderate paralysis	
	with severe paralysis with bulbar paralysis and paralysis	

A case will be one of "acute poliomyelitis" if the patient presents the symptoms enumerated above and is acutely ill.

The period of acute illness lasts from one to seven days, the average being four days. In general, a case in the first forty-eight hours of illness if paralysis is not present, or in the first twelve if paralysis exists, may arbitrarily be designated as "early acute." Thereafter it may be called "late acute." If any form of specific therapy is to be employed, it is probable that results will be modified by the stage of the disease in which the treatment is instituted.

The degree and extent of clinical paralysis can be determined only by a comprehensive muscle examination. Arbitrary standards must be selected here because of the individual variations which prevent the establishment of clearcut groups:

1. "Without paralysis" needs no discussion.

2. "With slight paralysis" should include patients in whom the involved muscles are capable of carrying out all active movements against gravity but in whom muscle power is so impaired that it is insufficient to overcome resistance offered by the examiner.

3. "With moderate paralysis" should be used to designate a degree of involvement in which good muscle contraction exists, so that partial to complete movement can be accomplished only when friction and gravity are removed.

4. "With severe paralysis" should include those cases in which muscle power is so diminished that no movement can be performed.

The extent of involvement can be indicated by stating the extremity and muscle groups involved, e. g. foot flexors, arm abductors, hip abductors.

A classification of this kind is more cumbersome, but it conveys a more accurate conception of the stage, nature and severity of the illness. Such a standard classification, if followed, lays the foundation for comparisons between epidemics in different places and at different times and might be of value in clarifying the effects of therapeutic measures. We believe that, in general, prognosis can be predicated from the use of such a classification; e. g., late acute poliomyelitis without or with slight paralysis usually make a good recovery, while patients acquiring a severe paralysis early in the illness have a poor outlook for significant recovery.

It should be pointed out that patients with poliomyelitis who have had subsidence of fever and other acute symptoms are no longer in the "acute" stage but are convalescent. Such "convalescent" cases should not be classified as suggested in the tabulation. They belong in a group which may be called "convalescent poliomyelitis," and the extent of the (then) final paralysis can be noted.

SIDNEY O. LEVINSON, M.D.

PAUL H. HARMON, M.D.

Chicago.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### GLAUCOMA AND COFFEE

*To the Editor:*—What is the present opinion regarding the use of tobacco, alcohol, coffee or tea for a patient with simple chronic glaucoma? I first noted trouble with reading about two years ago and went to several eye men, all of whom prescribed stronger glasses. The diagnosis of glaucoma was eventually made and pilocarpine prescribed. The first night of taking it I suffered an acute attack with all the textbook symptoms. About eight months ago I underwent an operation on my left eye (iridectomy) and later had a troublesome iritis seriala. I am now using pilocarpine in moderation and have no trouble aside from an occasional attack of orbital pain, which usually yields to 20 grains (1.3 Gm.) of acetylsalicylic acid. I am still greatly troubled by the halos around lights and the only way I can shut them out is to instil sufficient pilocarpine to give me a pinpoint pupil. Wearing dark glasses only gives me more pain and lacrimation later. My pressure is now around 16 to 18. Will Sanka coffee hurt me?

M.D., New York.

ANSWER.—Opinion is not unanimous in the ophthalmologic profession as to the effect of stimulants such as tobacco and coffee on a glaucomatous eye. It is believed that such stimulants have a decided tendency to increase intra-ocular pressure, probably by vasodilatation within the iris and ciliary body. In fact, one of the provocative tests in eyes suspected as preglaucomatous is to have the patient drink two large cups of strong black coffee and then note the effect on the tension tonometrically registered. In possibly 15 per cent of the cases there is an increase in pressure of from 10 to 25 mm. of mercury within fifteen minutes. Consequently the average modern ophthalmologist warns his glaucomatous patients to abstain from coffee except in small amounts.



## ALOPECIA AREATA

To the Editor:—A man, aged 27, in excellent general health, has had for many years two small hairless spots on the bearded region of his face. Last June they began to spread and similar areas appeared on his scalp. Complete physical examination and urinalysis were entirely negative. The basal metabolism was minus 14, so that thyroid in gradually increasing doses up to 3 grains (0.2 Gm.) daily was given for a time. The local lesion was diagnosed as alopecia areata by a competent dermatologist and treated with caustics to no avail. From June to September the hair of his scalp, which was always plentiful, had fallen out to such an extent that he was almost completely bald. The areas denuded were perfectly clean, showing no signs of inflammation or broken-off hair stumps. The face was practically free of hair. I referred the patient to another excellent dermatologist, who confirmed the diagnosis of alopecia areata and advised ultraviolet therapy, saying that local measures were of no avail. For some time I have been giving the patient weekly exposures of erythema doses of Alpine light, irradiating scalp, face and trunk. In spite of this, the alopecia is progressing. His eyebrows and eyelashes are now falling out, about half the hair has been lost from the forearms, and areas of alopecia are appearing on the thighs. The pubic and axillary hair are as yet intact. Is any other form of therapy worth trying? There are no foci of infection and the patient is of a very stable nervous temperament. The alopecia did not follow any known event, such as a nervous shock or infectious disease. Kindly give references on this subject.

M.D., New York.

ANSWER.—There is little that is known with certainty about the cause of alopecia areata. The important theories advanced to explain its presence are the infectious, toxic, neuropathic and endocrine.

Syphilis is said to be a cause or associated with the occurrence of alopecia areata by a number of competent observers. Epidemics have been reported from institutions for children. That certain chemicals and toxins are capable of inducing alopecia is shown by the action of thallium. Deviations from the normal activity of the thyroid and sex glands have been seen in association with loss of hair. Injuries to the head or acute anxiety may be causative.

The treatment which the patient received is of the kind usually used. Since the man's basal metabolism is below normal and good results not infrequently follow thyroid feeding, it should be continued. It is quite probable that the patient's alopecia is on an endocrine basis. Besides thyroid activity, investigations of other endocrine glands should be made. Anterior and posterior pituitary substance may be given by injection and by mouth. There is nothing wrong except for the alopecia, so all one can do is to apply empirical measures. Some local irritant and parasiticide may be applied, such as Cutler's fluid. This consists of equal parts of phenol, chloral hydrate and tincture of iodine. It is used once or twice a week, depending on the degree of the irritational response. Ultraviolet baths are an accepted form of treatment. Epilating doses of x-rays have been recommended. It is well to try one small area first to see how useful this measure will be. Mental depression should be combated and the patient's attention should be diverted from himself by engaging him in work or travel. In universal alopecia occurring in adults the prognosis is apt to be bad, but persistence in treatment is necessary if only to keep the patient hopeful.

## References:

- Ullmann, K.: Deliberations of Ninth International Congress of Dermatology 2: 774, 1935.  
Leipold, W.: *Dermat. Wchnschr.* 105: 1259, 1937.

## DIMETHYL SULFATE

To the Editor:—A patient is doing research work and is using dimethyl sulfate. What precautions should he take to prevent any poisoning? What would be the symptoms and treatment in case of poisoning?

GEORGE A. BAKKE, M.D., Oakland, Calif.

ANSWER.—Dimethyl sulfate is one of the most toxic substances used in industry and should be manipulated only by highly skilled and experienced persons. Prosser White (The Dermatogoses or Occupational Affections of the Skin, Fourth Edition, H. K. Lewis & Co., Ltd., London, 1934, p. 312) states "Dimethyl sulphate . . . is extremely poisonous and one of the most dangerous substances used in the colour industry. Its vapour has a delayed action which ends in a burn, like that from sulphuric acid." Any person responsible for the guiding of workers handling this material should consult the references appended at the end of this brief comment. In general, it may be stated that dimethyl sulfate may be prepared by distilling a mixture of chlorosulfonic acid and methyl alcohol. The vapors from these substances constitute the chief source of injury, which may be either local or systemic. The local injury is one of an extensive caustic burn, varying from simple redness to extensive ulceration and necrosis. After absorption systemic disease may be manifest by convulsions, coma, paralysis, associated with

marked vascular and renal disturbances. Changes take place in the blood characterized by polycythemia and leukocytosis. The temperature may reach high levels. The eyes are especially prone to injury from local action. By way of prevention and first aid the following is suggested:

Suitable rubber gloves should be worn whenever direct hand contact is possible. If exposure has taken place all clothing quickly should be removed and the body sponged with dilute aqueous ammonia. Immediate showers with water may be preferable. Mild alkaline solution should be utilized for flushing the eyes. Industrial operations should be carried out only in enclosed systems. If vapors are to be discharged from semi-enclosed systems, such discharges should take place from comparatively high stacks so that ample solution may preclude injury to persons in the neighborhood. In work rooms where accidents have arisen leading to prospective discharge of vapors into work rooms, all workmen quickly should leave the dangerous area. Workers suffering from or prone to suffer from inflammatory disorders of the eye or respiratory tract should not be employed for duties involving exposure to dimethyl sulfate. In general, the same degree of respect should be extended to dimethyl sulfate as to mustard gas.

## References:

- Occupation and Health, *Pathology and Social Welfare*, Inter de Grosz, S.: Relation to Ophthalmology, *Am. J. & Toxicol.* 19: 196 (Nov.) 1937.  
Peterson, Haines and Webster: *Legal Medicine and Toxicology*, ed. 2, Philadelphia, W. B. Saunders Company, 2: 795, 1936.  
Leschke, Erich: *Clinical Toxicology*, Baltimore, William Wood & Company, 1934, p. 180.  
McNally, William D.: *Toxicology*, Chicago, *Industrial Medicine*, 1937, p. 692.  
Hamilton, Alice: *Industrial Toxicology*, New York, Harper & Brothers, 1934, pp. 177 and 237.  
Kober and Hayhurst: *Industrial Health*, Philadelphia, P. Blakiston's Son & Co., 1924, p. 631.

## TRICHOMONAS INTESTINALIS

To the Editor:—Please give possible drugs or other therapy for treatment of *Trichomonas intestinalis* infestation. A patient has been treated two weeks with enemas of warm salt solution and copper sulfate with no relief from diarrhea, abdominal pain or gross number of parasites microscopically. Is there any other organism that would be mistaken for *Trichomonas intestinalis*?

M.D., New Mexico.

ANSWER.—It is doubtful whether *Trichomonas* is a true intestinal pathogen, and other etiologic agents such as the dysentery bacillus must be eliminated.

There is no specific treatment for *Trichomonas intestinalis* infestation. Ratcliffe showed that four types of resorcinols when fed to rats which harbored *Trichomonas* in the intestine produced a rapid change in the intestinal flora so that one type of *Trichomonas* (*muris*) disappeared entirely and another type (*parva*) was reduced to 10 per cent of its original number. Ratcliffe also stated that a small number of human infections treated with N-heptyl resorcinols showed excellent results. Castellani recommended methylthionine chloride in 0.12 to 0.18 Gm. capsules three times a day by mouth, and bowel irrigations with from 1:3,000 to 1:5,000 solution.

Escomel considered turpentine almost a specific for intestinal trichomoniasis. He described two forms of therapy in his book "La trichomonosis intestinal." In the one that he prefers, for three days a tablespoonful of the following prescription is taken every two hours: pure oil of turpentine from 2 to 4 Gm., camphorated tincture of opium from 6 to 12 Gm., acacia 120 Gm., syrup of acacia 30 Gm. The diet is restricted to carbohydrates, and liquid ingestion is limited to rice water. In addition, from one to three enemas are given, alternating as follows: first an evacuating injection; second a retention enema consisting of four spoonfuls of boiled water, a beaten egg yolk, 10 drops of tincture of opium and from 15 to 30 drops of oil of turpentine. After three days of treatment the feces are examined. If *Trichomonas* is not found, treatment is stopped and the diet is gradually changed to normal. If *Trichomonas* is found, the treatment is continued until the organisms disappear. For cases that are resistant to turpentine, Escomel recommended compound solution of iodine, one part in 1,000 parts of water as an enema on each of three successive evenings.

Chiniofon has been recommended for *Trichomonas intestinalis* infestation as well as for amebic dysentery. It is given orally in doses from 0.25 to 1 Gm. in the form of pills or cachets three times a day. It is also administered rectally, from 1 to 5 Gm. freshly dissolved in 200 cc. of water at a temperature not above 44 C. This treatment may have to be continued for several weeks. Because of the iodine in chiniofon, care must be exercised in patients with thyroid disturbance.

It is rarely possible to confuse *Trichomonas intestinalis* with other organisms in the intestine.

ESTROGEN IN URINE—NEGATIVE ASCHHEIM-  
ZONDEK TEST IN PREGNANCY

To the Editor.—Please give me the details of the urine examination for follicular and follicle-stimulating hormones. I should also like an explanation for the occasional negative Aschheim-Zondek test in a pregnant woman. What is the relationship of the presence of either the follicular or the follicle-stimulating hormones to pregnancy?

E. L. FITZSIMMONS, M.D., Evansville, Ind.

ANSWER.—Estrogen in the urine may be detected by the method of Kurzrok (The Endocrines in Obstetrics and Gynecology, Baltimore, William Wood & Co., 1937). This is a modification of the Allen-Doisy test for the production of estrous changes in castrated rats as evidenced by the production of a vaginal spread containing epithelial cells both nucleated and nonnucleated.

The gonadotropic factor is best detected by means of the Aschheim-Zondek test or the Friedman modification of this test. The latter is most widely used because of the relative simplicity of technic and the fact that using rabbits makes the gross observation of the test more satisfactory. For this purpose a previously segregated female rabbit is injected intravenously with 10 cc. of the suspect urine. The rabbit is examined twenty-four hours after the injection. The abdomen is opened and the ovaries are inspected. If the test is positive, hemorrhagic follicles or corpora lutea or both will be found.

The occasional negative Aschheim-Zondek test as obtained with the urine of a pregnant woman may be due to the presence of an insufficient amount of gonadotropin or to occasional refractoriness of the test animal. In the former case a subsequent test will be positive. One may avoid the latter source of error by retesting every animal that gives a negative test, using urine from a patient who is known to be pregnant. If this urine produces a negative test, the animal is refractory.

Gonadotropic substance makes its appearance in large quantities early in pregnancy and can often be detected within a week or ten days after pregnancy has taken place. It steadily increases in amount until about the fifth month of pregnancy, when it reaches a peak and begins to diminish. The amount of estrogen rises slowly in early pregnancy but continues to increase until term is reached. This explains why tests for detection of gonadotropin are of greater value in the determination of early pregnancy than are tests for estrogen.

## CHROME DUST AND LUNG CANCER

To the Editor.—What is the possibility of continuous exposure to chrome dust (sodium dichromate) being the causative factor in carcinoma of the lung? Are there any references to this subject available?

W. H. LONGLEY JR., M.D., Jersey City, N. J.

ANSWER.—Several references are available dealing with lung cancer among chromate workers:

Teley, L.: Occupational Cancer of the Lung, *J. Indust. Hyg. & Toxicol.* 19:73 (Feb.) 1937.

Lehmann, K. B.: Ist Grund zu einer besonderen Beunruhigung wegen des Auftretens von Lungenkrebs bei Chromatarbeitern vorhanden? *Zentralbl. f. Gewerbehyg. u. Gewerbehyg.* 9:168 (Aug.-Sept.) 1932.

Pfeil, E.: Lungentumoren als Berufskrankung in Chromatbetrieben, *Deutsche med. Wchschr.* 61:1197 (July 26) 1935.

Alvens, W.; Bauke, E. E., and Jonas, W.: Auffallende Häufung von Bronchialkrebs bei Arbeitern der chemischen Industrie, *Arch. f. Gewerbehyg. u. Gewerbehyg.* 7:69, 1936; abstr. *München. med. Wchschr.* 83:485 (March 20) 1936.

Campbell, J. Argyll: Cancer of the Human Lung and Animal Experiment, *J. Indust. Hyg. & Toxicol.* 19:449, 1937.

Teley, in the paper cited, says: "Inhalation of chromate dust by workers in chromate factories produces a relatively high incidence of this disease [pulmonary cancer] and perhaps also of cancer of the digestive tract."

## BACTERIOPHAGE THERAPY

To the Editor.—What is the present status of the so-called bacteriophage treatment of disease? I have in mind especially the use of this preparation in general peritonitis.

M.D., North Carolina.

ANSWER.—d'Herelle, who did most of the early work on bacteriophage, conceived of it as an ultramicroscopic living agent which produces a disease of bacteria ending in "lysis" or disruption of the cell. He believed that the introduction of the proper bacteriophage into the diseased host would result in mass destruction of the invading organisms. As a consequence of d'Herelle's encouraging views, innumerable clinical trials of bacteriophage therapy were undertaken. While many favorable reports followed, particularly in the early phases of clinical experimentations, the consensus of competent opinion now seems to be that bacteriophage therapy has no intrinsic value; i. e., bacteriophage injected into the patient does not effectively bring about bacterial destruction in tissue foci. The reason for this

has been made clear by the studies of Krueger and Northrop and the more recent work of Krueger (see series of papers in the *Journal of General Physiology* from 1929 to 1937) on the mechanism of the bacteriophage-bacterium reaction. The primary difficulty seems to depend on two facts: 1. A certain high ratio of bacteriophage to bacteria is requisite for lysis. 2. The rapid production of bacteriophage requires optimal bacterial growth. Under ordinary conditions in a tissue, bacterial growth is far from optimal and is held in check by various mechanisms of host resistance and therefore little bacteriophage is formed (Krueger, A. P.; Lich, R., Jr., and Schultze, K. R.: *Proc. Soc. Exper. Biol. & Med.* 30:73 [Oct.] 1932) and even that small amount is bound to a considerable extent by tissue colloids. Hence the critical lytic threshold value is seldom attained.

Krueger several years ago advanced proof that bacteriophage is a protein with the properties of an enzyme, and Northrop has recently confirmed this by isolating a protein which possesses all the properties of bacteriophage (*J. Gen. Physiol.* 21:335 [Jan.] 1938). There seems to be no more reason to employ the term living in connection with bacteriophage than there is to use it with reference to an enzyme or a virus such as Stanley's tobacco mosaic virus.

There is no satisfactory proof that bacteriophage is of value in the treatment of peritonitis.

## HEMOCHROMATOSIS

To the Editor.—A woman aged 29 with diabetes is beginning to have a definite bronzing of the skin, with hypotension. Her blood pressure ranges from 94/62 to 80/30. She has had one attack of diabetic coma. There is no evidence of cirrhosis of the liver or ascites. Does hemochromatosis ever occur in the female? Is it always accompanied by cirrhosis of the liver and ascites?

T. K. LEWIS, M.D., Birmingham, Ala.

ANSWER.—For the detection of hemosiderin in the urine a method often used is that of Rous (*J. Exper. Med.* 28:645 [Nov.] 1918). It is outlined in Todd and Sanford: *Clinical Diagnosis by Laboratory Methods*, ed. 8, Philadelphia, W. B. Saunders Company, 1935, page 138. In the case cited it would be valuable to examine a section of the skin for iron pigment and excess melanin.

In Sheldon's monograph on hemochromatosis (London, Oxford University Press, 1935) an analysis is made of 311 "genuine" cases reported in the literature. Sixteen of these, or only 5.1 per cent, were in women. Cirrhosis of the liver is an essential feature of hemochromatosis in contrast to diabetes and bronzing of the skin, which may be absent. Ascites often occurs in the later stages of the disease; it was recorded in 22 per cent of Sheldon's series and he believes that the true frequency is much greater.

The most satisfactory way of diagnosing hemochromatosis during life is to excise a bit of skin from an abnormally pigmented region. The full thickness of corium should be included. The skin should be fixed in solution of formaldehyde or in alcohol, sectioned in paraffin, and stained by the technic recommended by Warren (*Pathology of Diabetes Mellitus*, ed. 2, Philadelphia, Lea & Febiger, 1938).

## TREATMENT OF TAENIA SAGINATA INFESTATION

To the Editor.—I have as a patient a middle-aged woman infected with *Taenia saginata*. She has at various times taken the usual anthelmintics, including pelletierine and aspidium, without completely eliminating the parasite. Please suggest a satisfactory treatment.

L. MAXWELL LIDE, M.D., Florence, S. C.

ANSWER.—Aspidium has been a drug of choice for the treatment of tapeworm for a number of years. Frequent failures to remove the complete worm with this drug have been reported and are in part due to the method and dosage employed. Magath and Brown have standardized the aspidium treatment for tapeworm and report uniform success. (*THE JOURNAL*, May 14, 1927, p. 1548.)

Carbon tetrachloride was introduced for the treatment of tapeworms by Daubney and Carman (*Parasitology* 20:185 [July] 1928). Owing to the simplicity of the method and its great efficiency, from 70 to 97 per cent of the worms being removed by one treatment, it enjoys wide usage. Treatment for an adult is carried out as follows:

To avoid the possibility of intoxication from carbon tetrachloride the patient should be put on a high calcium diet from ten days to two weeks before treatment, and no meat should be given for a day or so before or after the administration of carbon tetrachloride. A light evening meal should be taken, but a preliminary purge has been found unnecessary. In the morning, breakfast should be omitted and carbon tetrachloride given early.

Thirty Gm. of magnesium sulfate should be dissolved in half a glass of water and the adult dose of 3 cc. of carbon tetrachloride should be shaken up in this solution and swallowed. No breakfast should be allowed until the purge has acted. Following the action of the purge a warm soapsuds enema may be given and the stool examined for the head of the worm. Alcohol should not be taken during treatment.

#### ALLERGY TO MERCURY IN AMALGAM FILLINGS

To the Editor:—A woman has a skin eruption diagnosed by one skin specialist as "infectious dermatitis" and by another as an allergy against mercury. A skin reaction to mercury can be experimentally produced. She has a great many silver amalgam fillings in her mouth. Has an allergic reaction to the mercury in fillings been reported?

NITA NIETH ARNOLD, M.D., Chicago.

ANSWER.—Allergy to mercury is one of the most common causes of allergic dermatitis. The usual contact is one directly to the skin either by the handling of mercury compounds or by the use of medicaments containing mercury, such as antiseptics and mercury ointments. That sufficient mercury may be absorbed from amalgam fillings to cause mercury poisoning is evidenced by the numerous reports in literature, among which are the following:

Stock, A.: *Arch. f. Gewerbepath. u. Gewerbehyg.* 7: 388, 1936.

Stefensen, K.: *Ugesk. f. læger.* 96: 855 (Aug. 2) 1936.

Herrnknecht, W., and Scheidt, C.: *Fortschr. d. Zahnk.* 6: 664 (Aug.) 1930.

Meyer, E.: *Med. Welt* 4: 703 (May 17) 1930.

Flüchel, A.: *Aertzt. Rundschau* 38: 309 (Oct. 25) 1928.

It stands to reason that, if sufficient mercury can be absorbed from amalgam fillings to produce mercury poisoning, the amount would be sufficient to produce inflammatory reactions of the skin if the patient happened to be sensitive to mercury.

Dermatitis can be produced by injection of mercury salts. A case is reported of dermatitis caused by the mercury in dental amalgam (Blumenthal, Franz, and Jaffé, Käte: *Deutsche med. Wchnschr.* 55:1720 [Oct. 11] 1929).

There are undoubtedly other cases in the literature and many more unreported. Attention must be called to the fact that other metals also are used in dental fillings, and the possibility of dermatitis due to other metals must be kept in mind.

#### RIVERS' SMALLPOX VACCINE

To the Editor:—What is Rivers' smallpox vaccine and how is it used?  
M.D., New York.

ANSWER.—Rivers' smallpox vaccine is prepared in modified tissue cultures consisting of minced chick embryo tissue suspended in Tyrode's solution. After cultivation, when the material has been shown to be bacteriologically sterile, it is mixed with sterile acacia solution, frozen and desiccated.

When desired for use, an ampule is opened aseptically and sterile water or salt solution is added as a diluent. After the material has been thoroughly mixed in the diluent, 0.1 cc. is given intracutaneously.

Reactions appear usually between the fourth and the tenth day after inoculation; seven days is the average length of time. As a rule no open sore develops and the reaction, which consists of redness and swelling, disappears within three weeks.

Reference:

Rivers, T. M., and Ward, S. M.: *Jennerian Prophylaxis by Means of Intradermal Injections of Culture Vaccine Virus*, *J. Exper. Med.* 62: 549 (Oct.) 1935.

#### INJECTION OF PROCAINE HYDROCHLORIDE FOR SPRAINS

To the Editor:—Is it considered good practice to inject procaine hydrochloride into a sprained knee as routine treatment? An osteopath nearby is doing this in order that children may continue to play basketball. I advised taping the sprained knee, with rest.  
M.D., Colorado.

ANSWER.—A sprain of any kind indicates injury to supporting tissues. A sprained knee should be protected against reinjury and supported either by a splint or by adhesive strapping and an elastic bandage until the injured tissues have had time to repair. Injection of procaine hydrochloride into a sprained joint, to relieve the pain so that activity may be made possible, is a dangerous procedure. The pain which is present, after such an injury, is nature's way of warning the individual that damage has been done and that further activity producing the pain is increasing the injury. The local anesthetic simply paralyzes the warning signal and is as much a mistake as it would be to disconnect the burglar or fire alarm simply because the sound of it annoyed the owner of the establishment in which it had been installed.

#### EXCRETION OF BROMIDES

To the Editor:—Bastedo in his "Therapeutics" says that the bromides are slowly eliminated and that for weeks they may be detected in the urine and blood. How long would the effect last? How long would it be until the body would be entirely free from the effect of the bromism? I realize that this is a hard question, but bromides are used so freely in medicine that it must be important to those who use or prescribe them to know what the final result will be on the patient.  
M.D., California.

ANSWER.—The kidneys excrete bromide [Br<sup>-</sup>] less efficiently than iodide [I<sup>-</sup>] and chloride [Cl<sup>-</sup>], so that several days may be required to excrete the major portion that is in the body when the administration is stopped.

The rate and duration of excretion and the persistence of the effects depend on the original bromide level. With a single dose of 1 or 2 Gm., little effect remains after twelve to twenty-four hours; but with doses large enough to produce major toxic effects it may take a week till the bromide has fallen to an innocuous level. The excretion may be hastened by administration of sodium chloride. If a bromide acne or other dermatitis has started, this may take a little time to heal after the bromide level has fallen.

Traces of bromide may be detected in the urine for at least three weeks after its administration has been stopped but these quantities are too small to be significant.

#### FAMILIAL PERIODIC PARALYSIS

To the Editor:—In *Queries and Minor Notes* in THE JOURNAL, June 11, page 2026, appeared a discussion of familial periodic paralysis in which it was stated that no practicable treatment is available. Through my work dealing with the biochemical and physiologic role of potassium in the animal organism, I am acquainted with the literature of this mineral element. Recently two groups of investigators (Herrington, M. S.: Successful Treatment of Two Cases of Familial Periodic Paralysis with Potassium Citrate, *THE JOURNAL*, April 17, 1937, p. 1339, and Aitken and his associates, *Clin. Sc.* 3: 47 [No. 1] 1937) have described a lowering of potassium in the blood serum in cases of familial periodic paralysis during the paralytic attacks and found that administration of potassium salts by mouth raises the serum potassium level and abolishes the paralysis.

ELSA ORENT-KEILS, Sc.D., Baltimore.

To the Editor:—Usually the answers published in *Queries and Minor Notes* are exceptionally authoritative and therefore I am presuming to call attention to a serious omission of information. In THE JOURNAL June 11, page 2026, in reply to a letter from a Massachusetts physician regarding two cases of familial periodic paralysis, the statement is made "There is no treatment known which is effective either in preventing this disease or in shortening its course." Is it possible that your commentator is not aware of the report of Aitken, Allott, Castleden and Walker (*Clin. Sc.* 3: 47 [No. 1] 1937) entitled "Observations on a Case of Familial Periodic Paralysis," in which the rational use of potassium salts is demonstrated? The confirmatory studies reported by Joseph Ferrebee, Dana Atchley and Robert Loeb at the thirtieth annual meeting of the Society for Clinical Investigation at Atlantic City this spring, as well as the more extended reports from the British investigators in the current issue of *Clinical Science*, should be of interest to your consultant. I have been observing an undoubted case of familial periodic paralysis during the last year. Many years ago the patient discovered for himself that rochelle salt in large doses would effectively abort the paralytic attack. Since the patient has been under my care, we have found that potassium chloride is equally effective.

CLARENCE L. ROBBINS, M.D., New Haven, Conn.

#### "EXCESSIVE LIBIDO IN MAN"

To the Editor:—THE JOURNAL is looked to throughout the country by physicians as a prominent organ for the dissemination of progress in medical sciences. At times a lack of psychophysiological evaluation is displayed in the answers concerning clinical problems. In the issue of June 11 is a query entitled "Excessive Libido in Man." The inquiring physician has presented evidence of overactivity of at least three glands of internal secretion in his patient: the thyroid, the pancreas and the gonads. Considerable authority exists to indicate that these glands are influenced by emotional states. Moreover, the man was said to be "nervous" and "bromides" were recommended in the answer. Yet no mention was made of employing psychiatric investigation and treatment in this problem. To state that, other than cauterization, "no remedy has thus far been found to alleviate the condition" is an injustice to those physicians who have labored for years, often with therapeutic success, to demonstrate that a need for excessive sexual activity is a neurotic condition. Most readers of THE JOURNAL (myself among them) look to *Queries and Minor Notes* for instruction in keeping abreast with the most advanced knowledge in the science of healing. Recently I saw a man aged 29, a psychopath with hypochondriacal reactions, who complained of pain in the genitals. He had been subjected to numerous urologic instrumentalizations by various doctors until finally orchidectomy was performed! Such practices have no place in a modern medical world and it is a function of THE JOURNAL to exert such guiding influences in maintaining a high standard of medical thinking and treatment as to make therapeutic errors like this rare.

HERMAN SELINSKY, M.D., New York.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in THE JOURNAL, August 6, page 561.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* Examinations will be held in all centers where there is a Class A medical school and five or more candidates who wish to write the examination, Sept. 12-14. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF ANESTHESIOLOGY: An affiliate of the American Board of Surgery. New York, Oct. 21-22. Applications must be filed sixty days prior to examination. Sec., Dr. Paul M. Wood, 745 Fifth Avenue, New York.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: St. Louis, Nov. 11-12 if the number of candidates warrants it. Applications of Class B candidates should be filed by Sept. 1 and of Class A by Oct. 1. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: Written examinations will be held in various parts of the United States, Oct. 17 and Feb. 20. Application for the October examination must be received before Sept. 15 and for the February examination on or before Jan. 1. Sec., Dr. William S. Middleton, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: Written examination and review of case histories of Group B applicants will be held in various cities of the United States and Canada, Nov. 5. Last date for applications is Sept. 5. General examination for all candidates (Groups A and B) will be given in St. Louis, June. Applications must be filed not later than sixty days prior to date of examination. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: New York, Oct. 7, and Washington, D. C., Oct. 8. All applications should be filed immediately and case reports, in duplicate, must be filed not later than sixty days before the date of examination. Sec., Dr. John Green, 3720 Washington Blvd., St. Louis, Mo.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Memphis, Tenn., January. Applications for this examination must be filed with the Secretary on or before Oct. 15. Sec., Dr. Fremont A. Chandler, 6 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Washington, D. C., Oct. 7-8. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PEDIATRICS: Detroit, October 26; Rochester, N. Y., November 13; and Oklahoma City, November 15. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York, Dec. 28-30. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: Atlantic City, N. J., Sept. 15-18. Sec., Dr. Byrl R. Kirklin, 102-110 Second Ave. S.W., Rochester, Minn.

California March Examination

Dr. Charles B. Pinkham, secretary, California State Board of Medical Examiners, reports the written examination held at Los Angeles, March 8-10, 1938. The examination covered nine subjects and included ninety questions. An average of 75 per cent was required to pass. Fifty-four candidates were examined, fifty of whom passed and four failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
College of Medical Evangelists.....	(1937)		84.2
Stanford University School of Medicine.....	(1937)	85	87.3
University of Southern California School of Medicine.....	(1937)		88.6, 88.7, 89.1
George Washington University School of Medicine.....	(1937)		85.1
Georgetown University School of Medicine.....	(1936)		79.1
Loyola University School of Medicine.....	(1938)		83.1
Northwestern University Medical School.....	(1934) 75.8, (1937)		87.2*
Rush Medical College.....	(1936)		79.9,
86.8, (1937) 83.1, 83.2, 85.3			
University of Illinois College of Medicine.....	(1937)		80.4,
83.9, 84.7,* 85.3			
State University of Iowa College of Medicine.....	(1936)		79.4,
(1937) 83.9, 84			
University of Louisville Medical Department.....	(1921)		84.9
University of Louisville School of Medicine.....	(1935)		85.4
Harvard University Medical School.....	(1935)		85.6
Tufts College Medical School.....	(1936) 75.3, (1937) 78.9,		85.8
University of Minnesota Medical School.....	(1937) 81.6,*		84.8*
St. Louis University School of Medicine.....	(1937)		81.6,
81.6, 84, 87.2			
Washington University School of Medicine.....	(1936) 89.4, (1937)		82.9
Creighton University School of Medicine.....	(1936)		78.2,
(1937) 79.4, 81.1, 82.2			
University of Nebraska College of Medicine.....	(1937)		85.2
Western Reserve University School of Medicine.....	(1936)		84.1
Jefferson Medical College of Philadelphia.....	(1936)		85.4
University of Pennsylvania School of Medicine.....	(1935)		87.9
University of Texas School of Medicine.....	(1936)		85.2
University of Wisconsin Medical School.....	(1937)		87.4
McGill University Faculty of Medicine.....	(1936)		77.6
Albert-Ludwigs-Universität Medizinische Fakultät, Frei-			
burg.....	(1925)		77.6
Julius-Maximilians-Universität Medizinische Fakultät,			
Würzburg.....	(1921)		81.8

School	FAILED	Year Grad.	Per Cent
College of Medical Evangelists.....	(1937)		73.2
St. Louis University School of Medicine.....	(1937)		73.4
University of Nebraska College of Medicine.....	(1935)		69.2
Schlesische-Friedrich-Wilhelms-Universität Medizinische Fakultät, Breslau.....	(1925)		59.4

Thirty-three physicians were licensed by reciprocity and one physician was licensed by endorsement from April 8 through June 28. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of California Medical School.....	(1928)		New York
University of Colorado School of Medicine.....	(1932), (1933), (1936) Colorado		
Chicago College of Medicine and Surgery.....	(1915)		Illinois
University of Illinois College of Medicine.....	(1934)		Illinois
Indiana University School of Medicine.....	(1926)		Indiana
State University of Iowa College of Medicine.....	(1930)		Iowa,
(1935) Minnesota			
University of Kansas School of Medicine.....	(1931)		Minnesota,
(1935), (1936, 2) Kansas			
Tulane University of Louisiana School of Medicine.....	(1921)		Louisiana
Tufts College Medical School.....	(1932)		Mass,
University of Michigan Medical School.....	(1921)		Michigan
University of Minnesota College of Medicine and Surgery.....	(1909)		Minnesota
St. Louis University School of Medicine.....	(1935)		S. Carolina
Washington University School of Medicine.....	(1928)		Maryland,
(1935) New York, (1936) Missouri			
Creighton University School of Medicine.....	(1935)		Nebraska
John A. Creighton Medical College.....	(1920)		Nebraska
Columbia Univ. College of Physicians and Surgeons.....	(1928)		New York
Long Island College Hospital.....	(1914)		New York
Western Reserve University School of Medicine.....	(1930)		Ohio
University of Oregon Medical School.....	(1919), (1935)		Oregon
Temple University School of Medicine.....	(1927)		Ohio
University of Pennsylvania School of Medicine.....	(1931)		Penna.
University of Pittsburgh School of Medicine.....	(1931)		Penna.
University of Tennessee College of Medicine.....	(1917)		Tennessee
University of Wisconsin Medical School.....	(1932)		Minnesota

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad.	of
University of Colorado School of Medicine.....	(1920)		U. S. Navy
* This applicant has completed the medical course and will receive the M.D. degree on completion of internship.			

Montana April Report

Dr. S. A. Cooney, secretary, Montana State Board of Medical Examiners, reports the written examination held at Helena, April 5-6, 1938. The examination covered ten subjects and included fifty questions. An average of 75 per cent was required to pass. Five candidates were examined, all of whom passed. Eleven physicians were licensed by reciprocity and two physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Georgetown University School of Medicine.....	(1937)		82.4
Rush Medical College.....	(1936)	82.2,	84.5
University of Illinois College of Medicine.....	(1937)		88.7
Albany Medical College.....	(1927)		85.2

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
College of Medical Evangelists.....	(1929)		California
Northwestern University Medical School.....	(1930)		Michigan
Rush Medical College.....	(1901)		Nebraska
State University of Iowa College of Medicine.....	(1937)		Iowa
University of Louisville School of Medicine.....	(1927), (1930)		Kentucky
University of Minnesota Medical School.....	(1927), (1930)		Minnesota
St. Louis University School of ..			Missouri
Creighton University School of ..			Nebraska
University of Texas School of ..			Texas

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad.	of
Harvard University Medical School.....	(1932) N. B. M. Ex.		
University of Virginia Department of Medicine.....	(1929) N. B. M. Ex.		

Wyoming Reciprocity and Endorsement Report

Dr. G. M. Anderson, secretary, Wyoming State Board of Medical Examiners, reports five candidates licensed by reciprocity and one candidate licensed by endorsement at the meeting held in Cheyenne, Feb. 7, 1938. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Colorado School of Medicine.....	(1936, 2)		Colorado
St. Louis University School of Medicine.....	(1935)		Missouri
University of Nebraska College of Medicine.....	(1933)		Nebraska
Osteopath* .....			South Dakota

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad.	of
Harvard University Medical School.....	(1927) N. B. M. Ex.		
* Licensed to practice osteopathy and surgery.			

## Book Notices

**A Textbook of Ophthalmology.** By Sanford R. Gifford, M.A., M.D., F.A.C.S., Professor of Ophthalmology, Northwestern University Medical School, Chicago. Cloth. Price, \$4. Pp. 492, with 259 illustrations. Philadelphia & London: W. B. Saunders Company, 1933.

The author's attempt "to compress within the limited space of a volume which may be used by medical students and general practitioners the essential facts of modern ophthalmology" has been well and thoroughly accomplished. The inclusion of slit lamp microscopy, the measurement of the blood pressure in the retinal vessels, special optical appliances for certain conditions, a list of therapeutic agents employed in ophthalmology, and visual standards adopted by the House of Delegates of the American Medical Association demonstrate the effort to make the text entirely abreast of the time. The colored plates are excellent. If any error has been made in the production of this all inclusive little volume, the voice of derogatory criticism might be directed to the inclusion of so many black and white photographs of fundus conditions and more especially to photographs of diseases of the anterior segment of the eye, which are reproduced too poorly to be of value. Perhaps the author will see fit to replace these by photographs in color or better black and white reproductions in a future edition. The usefulness of the volume is enhanced by thirty pages of index.

**Die wissenschaftlichen Grundlagen der Beurteilung von Blutalkoholbefunden.** Von Dr. Herbert Elbel, Assistent des Instituts für gerichtliche Medizin der Universität Göttingen. Boards. Price, 7.80 marks. Pp. 106, with 28 illustrations. Leipzig: Georg Thieme, 1937.

This booklet presents in concise form a summary of the literature on the subject of the scientific foundation for the interpretation of the alcohol content of the blood. The thoroughness of the author and his right to an opinion can be appreciated when the 545 references to the literature are considered. Some of the important observations and conclusions of the author are as follows: Alcohol is a factor in about 40 per cent of all accidents involving injury or death. In about 10 per cent of traffic accidents a responsible person had at least 0.2 per cent of alcohol in his blood. The definitely drunken person is less of a menace than one who is less "under the influence" of alcohol. In Germany a driver of a car is under the influence of alcohol when, because of indulgence in alcohol to any degree, he has lost some of his ability to drive his car or to pay proper attention to traffic. It is impossible to diagnose alcoholic intoxication for legal purposes from the clinical symptoms alone, and blood alcohol determinations furnish an important link in diagnosis. A Prussian supreme court further states that even small amounts of alcoholic beverages, which may be insufficient to produce noticeable symptoms, may still be sufficient to affect the safety, agility and distinctness of observation of the driver.

The Widmark method of determining alcohol is considered sufficiently accurate for practical purposes, but an error may be introduced by the presence of ether and acetone. It is interesting to note in this connection that simple tests performed in this country on both blood and urine are not appreciably affected by ether or acetone. The formula of Widmark, by which it is possible to calculate the total amount of alcohol in the body at definite times, is of great medicolegal importance. The ratio of grams of alcohol in the body to alcohol in the blood expressed as parts per thousand is found to average 0.55 for women and 0.68 for men, and the figure that is characteristic for the individual depends on the amount of fat in the body. The author's observations of fasting persons indicates a loss of body alcohol of from 5.4 to 8 Gm. an hour in five men and 4 and 4.3 Gm. in two women.

A discussion of the effect of epinephrine on tolerance for alcohol is particularly interesting, since it suggests the explanation for the sobering effect of fright and excitement; namely, that sudden splanchnic vasodilatation causes a diminished circulation of alcohol through the brain tissue.

A most important conclusion is that the psychic effect of alcohol taken in small doses and associated with low blood alcohol concentrations is so definite that there is no minimal, insignificant or irrelevant degree of consumption of alcohol for the safe handling of a motor vehicle. The author feels that

0.10 per cent of alcohol in the blood is unquestionably associated with definite inferiority, so that the alcohol may be the sole or predisposing cause of an accident. Finally, there is no definite quantitative relationship between blood alcohol concentration and degree of influence; judgment of the degree of culpability also depends on a consideration of the circumstances which brought the individual into contact with the law. This statement is unquestionably correct, but it must be mentioned that several American observers have been able to predict the concentration of alcohol in the blood or urine with remarkable accuracy from careful observation of persons who were arrested for being under the influence of alcohol.

**Dream Analysis: A Practical Handbook in Psychoanalysis.** By Ella Freeman Sharpe. Cloth. Price, \$2.50. Pp. 211. New York: W. W. Norton & Company, Inc., [n. d.].

Since an understanding of psychoanalysis is highly dependent on the analysis of dreams, one should be able to get a great deal of information from a systematized volume on this subject. The author delivered the material included in this volume in lecture form during the years 1934 and 1936 at the London Institute of Psychoanalysis. It is a well organized volume, not particularly technical or deep, but it does require some knowledge of psychoanalysis to get the most out of it. The author begins the volume with a discussion of a dream as a typical and individual psychic product. There is some discussion here of individual dreams, but the symbolism of these dreams is perhaps too lightly touched on, although later in the book this symbolism is developed to a greater extent. Since it is necessary to understand the mechanisms of dream formation, the author devotes the second chapter to this subject and then goes on to a discussion of the value of dreams to the analyst who obtains a clue to the wish fulfillment from the latent content of the dream. Since not all dreams are the same, various types of dreams are taken up, examples being given, such as a dream related by a man experiencing anxiety with regard to women. The next chapter shows in rather brief and sketchy form how a single dream might be analyzed and studied. The relationship of the dream to the content of the psychoanalyst is not explained in full here and, while one can see from this chapter that a great deal can be accomplished with a dream analysis, one does not see the total picture. Dream analysis of course is not a simple technic, so that it is necessary for the author to discuss problems which have come to her in her experience with dream analysis. She also illustrates dreams which occurred during psychic and physical crises. Psychoanalysis, after all, is aimed at readjustment, and the eighth, ninth and tenth chapters deal with readjustment and the results of analysis of persons with regard to their dreams. There is an appendix giving a list of dreams which were recounted in the book and, while a bibliography is listed in the table of contents, in the volume which was sent for review the bibliography was omitted. All in all this book is somewhat useful in rounding out the literature on psychoanalysis. It does not enable the untrained psychiatrist to do much more with dream material than he could before he read the book; but since opinions, particularly those of experienced people, are needed to polish up psychoanalytic thought, there seems to be a definite place for this volume in the library of the psychiatrist who wishes another point of view on psychoanalysis.

**Le phénomène de la guérison dans les maladies infectieuses.** Par F. d'Hérelle. Paper. Price, 75 francs. Pp. 414, with 19 illustrations. Paris: Masson & Cie, 1933.

The author has already published two monographs on bacteriology. As he indicates, the present work differs in that it is of more general interest than might be inferred from the title, "Phenomenon of Cure in Infectious Diseases." Bacteriophage has made great progress in the course of the last decade. New proofs which are irrefutable have been discovered, and the facts are now generally accepted even by those scientists who formerly disagreed with the principles involved. d'Hérelle devoted more than twenty years of his life to this study, he made many voyages to all parts of the world, and he has followed epizootics in Cochin China, scourges of cholera in the Indian hospitals and the villages of the Punjab, and epidemics of plague in Asia and Africa. He utilized and improved field laboratories in many cases and studied in this way a multitude



of cases of illness while he lived in the midst of the epidemic. The result of his experience is the advancement of a theory which explains the processes involved in the cure of infectious diseases and the manner in which epidemics are extinguished. In his preface d'Hérelle says "If the theory of cure as advanced and as suggested to me is a true result of my observations, we should be able to reproduce experimentally at will the natural process of cure." The researches which have been made on this subject he relates in the fifth chapter of the work.

This book will interest the bacteriologist and perhaps to a greater degree the biologist in its early chapters, which deal with the mutual question of bacteriophage and the problem of bacterial mutations. The portion which deals with the study of infectious diseases and epidemics will present matter of lively interest to the pathologist and the hygienist. For the physician there will be found for each of the diseases actually amenable to this mode of treatment a detailed therapeutic method by *bacteriophage provoquée*, which represents the specific therapy which will tend to provoke in the case of the diseased individual the actual phenomenon of cure. It is impossible, within the limits of this review, to list the many matters of interest which are taken up in this detailed and remarkable work. Outside the matters which have been indicated thus far and which will be found of great specific interest are the studies of cholera, plague, typhoid and paratyphoid fever, staphylococcal infections and anthrax. As no translation exists, the book will have to be read in the original.

**A Critical Investigation of the Blood Groups and Their Medico-Legal Application.** By Dawood Matta, M.B., Ch.B., Ph.D., Lecturer of Forensic Medicine, The Faculty of Medicine, University of Egypt, Cairo. The Egyptian University Faculty of Medicine, Publication No. 11. Submitted in thesis form to the University of Glasgow, October, 1936. Paper. Pp. 231, with 4 illustrations. Cairo, 1937.

The book is divided into six sections. The results of the original investigations of the author are thoroughly presented in addition to a brief and critical review of the present day knowledge of blood groups. Matta's investigations extended into many phases of the subject. After a study of the subgroups  $A_1$  and  $A_2$  and of the agglutinins  $\alpha_1$  and  $\alpha_2$  he aligns himself with those who hold that the differences between the two are merely quantitative. A titration of 200 specimens of blood group B leads him to the conclusion that as in blood group A there are similar quantitative differences in group B, which he divides into subgroups  $B_1$  and  $B_2$  with the corresponding agglutinins  $\beta_1$  and  $\beta_2$ . Further evidence is offered by Matta in support of Schiff's concept of the O factor as a blood group specific antigen and not a species antigen. Interesting and thought provoking is Matta's hypothesis of new genotypic formulas which are based on the assumption that the genotype of each person is composed of four genes that may represent each of the agglutinogens A, B or O. Four of each may be present, or any combination of them. He postulates the existence of fifteen subgroups, four within the groups A and B and six within the group AB. No subgroups are present in group O. The agglutinogens A, B and O are all dominant. Two genes out of the four of each parent are transmitted to the child. The subgroups  $A_1$  and  $A_2$ ,  $B_1$  and  $B_2$  are an expression of the quantity of each agglutinin in the genotype.  $A_1$  has the formulas AAAA, AAAO or AAOO and  $A_2$  has the formula AOOO. Similar structural formulas are suggested for the subgroups of B. Matta offers rather convincing arguments in favor of his hypothesis. If it stands the test of time, it would offer a satisfactory explanation for those exceptions from the hypothesis of Bernstein in which illegitimacy could not be invoked. The new hypothesis claims to invalidate that part of Bernstein's hypothesis which denies the possibility of an O child of an AB parent; it also claims to invalidate Thomsen's hypothesis of the inheritance of subgroups  $A_1$  and  $A_2$ . Matta is fully aware that his hypothesis, being based on a small material (ninety-nine families), needs further confirmation. The monograph includes studies on identification of blood groups in stains made by blood and by seminal fluid, and in saliva, with a valuable emphasis on sources of error. The bibliography is rather brief but well selected. The book is indispensable for those interested in the theory of blood groups and in their practical applications, particularly in medical jurisprudence.

**Milestones in Medicine: Laity Lectures of the New York Academy of Medicine.** Introduction by James Alexander Miller, M.D., President, New York Academy of Medicine. Cloth. Price, \$2. Pp. 276, with illustrations. New York & London: D. Appleton-Century Company, Incorporated, 1938.

This is the second volume of lectures delivered at the New York Academy of Medicine intended to give the layman some idea of background of medicine. As in all symposiums, the various lectures are unequal in their ability to hold the reader's interest. The arrangement of the volume is not such that the average reader would be immediately attracted to its contents. The essays devoted to the history of leprosy, by Newton E. Wayson, and the glands of internal secretion, by Walter Timme, should be, to the nonmedical reader, the most interesting in the volume. One cannot neglect, however, the essays on medicine at sea in the days of sail, by Karl Vogel, and the evolution of the human brain, by Frederick Tilney, which are excellent reading and demonstrate a historical perspective. The chapters on leprosy and medicine at sea are distinctly historical. They deal more with the beginnings of medicine, old customs and beliefs than do the other chapters, while the essay on the evolution of the human brain also contains a great deal that is historical. Timme, in his story of the glands of internal secretion, goes extensively into the stories of research and into the working of the various glands, and occasionally he interjects a sidelight on medical discoveries. There are three other chapters included in this book which are well written by experts, but they do not have the direct bearing on the history of medicine of those previously mentioned. The first chapter, for instance, is by Smith Ely Jelliffe, on the historical background of psychiatry. Ordinarily anything written by Jelliffe should be considered a valuable introduction to any volume in which it is contained. Jelliffe, in his writings and speeches, has always shown a true cultural background, excellent diction and a fascinating way of expressing himself. The present essay shows the first two traits as not particularly interesting—the discourse wanders about, does not cite interesting historical facts in psychiatry and is not up to Jelliffe's standards. The essay on the mechanisms of heredity, by Stockard, is the usual discussion of that subject. Little in the history of medicine is expounded—a few names are mentioned, but not in sufficient fashion to make this other than an essay on a technical medical subject. Dr. Sigerist has included a paper on the history of medical history. In a competent way he points out the various types of historical research which can be found in this field. It is adequate but rather dull. Nevertheless it has a place in the volume because, if one wishes to see the types of study which the other authors who have contributed to the volume have used, they can be interpreted in the light of Sigerist's study.

**Handbuch der Erbkrankheiten.** Herausgegeben von Dr. med. Arthur Gütt, Leiter der Abteilung Volksgesundheit im Reichs- und Preussischen Ministerium des Innern Präsident des Preussischen Landesgesundheitsrats. Band 1: Der Schwachsinn. Von Dr. med. F. Dübtscher. Paper. Price, 24 marks. Pp. 358, with 45 illustrations. Leipzig: Georg Thieme, 1937.

Because of economic and political changes in Germany there have been few studies following the type of monographic material which has previously been made available for American physicians. Before the war we were deluged with ponderous tomes which, if they made difficult reading, contained encyclopedic information. They were what they pretended to be. The present volume is intended to be a description of feeble-mindedness from the standpoint of hereditary diseases with particular reference to the new made tendencies in Germany for sterilization, race purification and the use of medicine for building up the nation as a whole. The volume turns out to be a book which would stress the race purification angle and is a rather heavy study of feeble-mindedness from all angles. About one fourth of the book is taken up with the organic brain changes of the feeble-minded, particularly those due to bacterial or mechanical traumatism. Exotic diseases are discussed in more detail than their frequency deserves. The last fourth of the book is devoted to a mass of intelligence testing material which has not, apparently, been standardized and is evaluated on an objective basis. It is, however, comprehensive. The discussion of sterilization and the German law regarding the sterilization of the feeble-minded is interesting, as it reveals something which American medicine has not heard; namely,

that sterilization has not been entirely enforceable and that while several German race hygienists, foremost among whom is Gütt, who writes the introduction for the present volume, have been trying to do much more sterilizing, the scientific justification of the need for sterilization has not yet been forthcoming, particularly in such cases as mongolian idiocy and those cases which are due to trauma of various sorts. There is a bibliography in this book but it does not compare with bibliographies in earlier handbooks of similar nature. It is incomplete, for much important English literature is omitted although there is a pretense that the English monographs on the subject have been covered. References to individual studies have been made in the text in such a manner that none of the statements can be verified. It scarcely seems necessary to read the present volume to get any new light on the study of feeble-mindedness. We in America seem to be far advanced over the Germans in dealing with the backward and the high grade individual. There is, of course, much valuable material which can be culled from this volume, but the effort involved is probably greater than the value to be received. The chapters on the sterilization law and on purification of the race are interesting to those who would like to know what is going on in Germany with regard to these matters.

**Alfred Owre: Dentistry's Militant Educator.** By Netta W. Wilson. Cloth. Price, \$4. Pp. 331, with 8 illustrations. Minneapolis: University of Minnesota Press; London: Oxford University Press, 1937.

This volume is the result of a desire of a number of Dean Owre's friends and former faculty associates in the University of Minnesota to sponsor a tribute to his memory. The book sets forth the record and achievements of Dean Owre in an understanding manner and in a completely sympathetic vein. To this extent the volume accomplishes the purposes for which it was written and consequently will be pleasing to his friends and to those who were in accord with his views on the "level technician plan" of dental education and who agreed with Dean Owre's enthusiasm for the Russian communistic system of health service. In a sympathetic, fictional biography, to be read with the full understanding that the reader is perusing it for inspiration, pastime or amusement, it is of no consequence if the presentation departs somewhat from reality. However, the nature of the sponsorship of this book, the fact that it is published by a university press, and the note of authenticity lent to the work by the personnel mentioned in the section on acknowledgments all give the impression that the contents of the volume may be accepted as strictly factual. The importance of any biographic work must be based on the accuracy and truthfulness of its contents. Only thus can history of value be written. It is to be regretted that Miss Wilson's book contains many gross inaccuracies. It is of relatively small import that she undoubtedly wrote with every intention of recording only an accurate history. Unfortunately the fact remains that the volume, in years to come, may be accepted as a true record of an important phase in the history of the dental profession. Any suspicion of deliberate intent to misstate or mislead may be dismissed because of the gross nature of some of the errors. As a tribute of loyal friends, and as a running history of the life and activities of the dean of two dental schools, the book is interesting and well written. However, as a factual history of a controversial period in the growth of the dental profession and its system of education, and as a reference work for the future student of the period, the book, through its loose treatment of important events and conditions, is of little value.

**Mental Hygiene for Nurses.** By Elizabeth Lee Vincent, Ph.D., Psychologist, Merrill-Palmer School, Detroit, Michigan. Cloth. Price, \$2. Pp. 263. Philadelphia & London: W. B. Saunders Company, 1938.

This little volume is not a brief textbook in psychiatry for nurses but rather a popular presentation of how to make a mental adjustment, which is particularly necessary for members of the nursing profession. There is little discussion of mental disease in it but rather a superficial treatment of emotional adjustment, in a clearcut, highly simplified, fashion. There is nothing that could not be obtained from one of the more thoroughgoing and better developed books on mental hygiene. However, some chapters view specific types of patients, such as obstetric cases, crippled children, the schizophrenic, unmarried mothers, and others from the point of view of the nurse who

wishes to help. There are many types of patient discussed in these chapters but none are given more than a brief paragraph, so that the information which the nurse can use is slight. Between the first chapter and these chapters, which are late in the book, there are general discussions dealing chiefly with methods of building up pleasant and better adjusted personalities for nurses. The information given here is not presented in a manner that is well adapted for the professional person who is able to go through a nurses' training school. It is more for the layman who wishes to overcome timidity and fears and to develop his memory. Background material in the sense of experiment and case records which would enable the professional person to understand both himself and the patient better is largely neglected. There is one chapter that might be commended and that is the chapter on learning. Psychologists, and the author is a psychologist and not a psychiatrist, have stressed learning procedures. Such features of learning as plateaus, laws of learning, are briefly discussed here, and it may be possible that this chapter would aid some nurse in becoming a slightly better student. A well trained mental hygienist or a nurse who is trained in psychiatric nursing under a good staff of teachers would be able to impress her students adequately without this book. The nurse who desires a good mental hygiene background would have to go to one of the more thoroughly developed textbooks in the field to understand the patient and would undoubtedly gain more from experience particularly with psychiatric guidance than she could possibly gain from reading the brief paragraphs in the present volume. One questions whether the author of this book is really acquainted with the problems that confront the nurse in actual practice.

**A Biological Approach to the Problem of Abnormal Behavior.** By Milton Harrington, M.D., Psychiatrist, Institution for Male Defective Delinquents, Nanuet, N. Y. Cloth. Price, \$4. Pp. 459. Lancaster, Pa.: Science Press Printing Company, 1938.

The writer of this volume is known for his critical attitude toward freudian psychology and the present volume is an attempt on his part to establish mechanistic rather than animistic theories as to the function of the human mind. This is the first volume of a projected two volume analysis of the mind based on its physiologic mechanism. The present volume, with the exception of a few introductory chapters, is divided into two major parts, one dealing with psychophysiology and the other with psychopathology. The general physiologic idea behind the work is based on simple stimulus response or elaborated reflex action. There is not much stress on the pavlovian idea in general but rather gross teachings of the animal psychologists are carried over fairly uncritically so that stress is laid on the sensory mechanism aroused by the stimuli and the form of the response. One relatively new point of view which the writer has added but about which he has given no particular structural demonstration is the concept of anticipation, wherein he indicates that the individual can anticipate certain types of needs, results and procedures in order to attain a significant goal. The second part of the volume, dealing with psychopathology, harks back to the early part of the present century. Much disturbance of various physiologic mechanisms previously described is discussed in order to show how pathologic change occurs. He points out that there are five different methods of making an adjustment: accomplishment, withdrawal, modification of thought, modification of posture, disabling of the machine. Psychopathology is a disturbance of one of these types of adjustment. Although there is no question that the mechanistic point of view of psychopathology is coming more and more strongly to the fore, it seems questionable whether the present volume will be satisfactory. First of all there is little actual demonstration either from the literature or by demonstration as to the validity of the theories on which the discussion is based. True, many of the statements made in the volume which support the author's belief are considered axiomatic, but even such a theory as the synoptic basis of memory has had some grave doubts cast on it in recent years. The present volume emphasizes a possible mechanical basis of thought and seems to be regression to the concepts of psychology which were emphasized by the behaviorist. As the author himself points out, these have not, at least in the strictly mechanical sense, satisfied our needs in the diagnosis and therapeutics of mental disease.

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Medical Practice Acts: Use of Title "Doctor" by Chiropractor Unlawful.**—The defendant, a licensed chiropractor, was convicted of violating a provision of the Wisconsin medical practice act restricting the use of the title "doctor" to persons licensed to practice medicine and surgery, osteopathy, or osteopathy and surgery. He appealed to the Supreme Court of Wisconsin.

The section of the medical practice act under which the defendant was convicted provides:

No person not possessing a license to practice medicine and surgery, osteopathy, or osteopathy and surgery, under section 147.17, shall use or assume the title "doctor" or append to his name the words or letters "doctor," "Dr.," "specialist," "M.D.," "D.O." or any other title, letters or designation which represents or may tend to represent him as a doctor in any branch of treating the sick.

It was stipulated that the defendant had advertised and announced himself as "Dr. H. J. Michaels, Chiropractor," or "H. J. Michaels, Doctor of Chiropractic"; that he was a licensed chiropractor under the laws of Wisconsin; that he held a diploma from a chiropractic college declaring him to be a doctor of chiropractic; that he had announced himself as aforesaid on signs about his office and that he had so advertised in pamphlets and newspapers; and that he treated patients by chiropractic adjustments only and fully informed each patient of the method of treatment before giving such adjustments. He contended that under the stipulated facts he had committed no offense under the medical practice act and further that the restriction in that act relating to the use of the title "doctor" was unconstitutional and void. In *Corsten v. Industrial Comm.* (Wis.), 207 Wis. 147, 240 N. W. 834, the court had under consideration the right of a chiropractor to receive compensation for treatment pursuant to the provisions of the workmen's compensation act. The court said in that case:

Under chapter 147 a chiropractor is not a physician, even though he does treat the sick and treat diseases and diagnose. Under that chapter physicians are licensed to practice medicine, section 147.17; while chiropractors receive "a certificate of registration in the basic sciences and a license to practice chiropractic," section 147.23. But "no certificate of registration shall be considered equivalent to a license (to practice medicine)." Section 147.17. And "no person not possessing a license to practice medicine and surgery, osteopathy, or osteopathy and surgery, under section 147.17, shall use or assume the title "doctor" or append to his name the words or letters "doctor," "Dr.," "specialist," "M.D." or "D.O." Section 147.14 (3). Thus these names and letters may be applied only to those who are licensed as physicians to practice medicine and surgery, and conversely those to whom the names and letters may not be applied are not physicians.

Considering the construction thus placed on the restrictions contained in the medical practice act, the court in the present case said, the stipulated facts show that the defendant was clearly guilty of violating those restrictions.

From a consideration of the various acts of the legislature, it was apparent to the court that for more than fifty years the use of the term "doctor" has been restricted in Wisconsin and the right to the use of the term has become associated with those entitled to practice medicine, surgery or, since 1903, osteopathy. The evident purpose of the restriction is to prevent imposition on the general public by the unauthorized use of the term. The defendant claimed that because the degree of doctor of chiropractic had been conferred on him by some school in Indiana, he was entitled to use that term in Wisconsin because it merely represented a statement of fact. When the defendant came to Wisconsin to practice, the court pointed out, he became subject to all the laws of Wisconsin, which certainly could not be modified by a diploma granted by a school in another state. The law providing for the licensing of chiropractors was enacted in 1925 and at the same time the section in the medical practice act relating to the use of the title "doctor" was rewritten and revised. This revision, the court said, was to make it clear that those practicing chiropractic could not hold themselves out as a doctor or append to their names the title of doctor because

that would tend to represent them as doctors authorized to practice medicine, surgery or osteopathy. The situation is not aided, the court pointed out, because the defendant explained to his patients the nature of his treatment before administering it. The title does not aid the defendant in the treatment; it merely aids him in securing the confidence of prospective patients and in inducing people to apply for treatment. The repeated attempts by chiropractors to have the section in question amended by legislative action indicated to the court quite conclusively that the meaning of the section was well understood. To the court the section seemed clear and unambiguous and in no way impaired the constitutional rights of the defendant. The judgment of conviction was therefore affirmed.—*State v. Michaels* (Wis.), 277 N. W. 157.

**Malpractice: Self-Inflicted Injury While Anesthetized; Res Ipsa Loquitur.**—After an appendectomy, performed by the defendant, the patient was removed to his hospital room and left in charge of a special nurse. When the patient regained consciousness, it was discovered that his left eye had been cut. Subsequently the patient lost his eye and sued the defendant, alleging that the injury was due to the defendant's failure to care and protect him properly during the time he was under anesthesia. The trial court directed a verdict for the physician, and the patient appealed to the court of appeals of Tennessee, eastern section.

An ophthalmologist testified that the plaintiff's eye had been cut by a sharp instrument, probably by a finger nail, and that the injury was probably self inflicted. The plaintiff apparently argued that the physician was liable by reason of the doctrine of *res ipsa loquitur*. That doctrine, said the court, asserts that whenever a thing which produces an injury is shown to have been under the control and management of the defendant, and the occurrence is such as in the ordinary course of events does not happen if due care has been exercised, the injury will be deemed to be due to the defendant's negligence, in the absence of any explanation by the defendant tending to show that the injury was not due to his want of care. While the doctrine has no application to the ordinary malpractice case, it should be applied, the court said, when a sound and unaffected member of the body, not the subject of the physician's diagnosis or treatment, is injured or destroyed while the patient is unconscious and under the immediate and exclusive control of the physician. The physician argued, apparently, that the doctrine should not be here applied because the injury was not shown to have resulted from the use of an "instrumentality" under his management and control. But, said the court, a human body, freed of the control of a conscious and rational mind, becomes an "instrumentality" potentially dangerous.

The patient contended that, within the meaning of the doctrine, he remained under the control of the defendant from the administration of the anesthetic until he regained consciousness the following morning. While the patient, said the court, remained under the control of the physician so long as he was in the operating room, after he was removed to his private room and after the physician left that room he was under the control of the graduate nurse. It was not shown, the court said, that the nursing of the patient, following the operation, was any part of the undertaking of the physician. During the performance of an operation a hospital nurse, although not in the regular employ of the operating physician, is under his special supervision and control and during that time the relation of master and servant, or principal and agent, exists and the physician is responsible for the negligence of the nurse. But, in the absence of special contract, the physician is not responsible for a negligent act of a nurse in the after-treatment of the patient following the operation unless it appears that the physician assumes to continue his control and direction of the nurse following the operation. The burden of proof rested on the patient to establish as a prerequisite to the application of the doctrine of *res ipsa loquitur* that the injury occurred while the plaintiff was under the control of the defendant. This the patient failed to do.

The physician did not assume responsibility for the safety of the patient following the operation because of a remark he made to members of the patient's family, after the patient had been taken from the operating room to his private room and on

being informed that the patient was violent under ether, to the effect that "we" will take care of him. The physician merely intended to reassure the family that the patient would be properly cared for at the hospital. In leaving his patient in charge of the graduate nurse the physician was guilty of no negligence. The evidence showed that graduate nurses are especially trained to care for patients following operations of this kind; that most patients are violent to some degree while under anesthesia; that it is considered safe practice to leave patients in the care of a graduate nurse, following the administration of an anesthetic; and that it was not customary for physicians to remain with their patients until they recover consciousness.

The court of appeals concluded, therefore, that the trial court was correct in directing a verdict for the physician.—*Meadows v. Patterson (Tenn.)*, 109 S. W. (2d) 417.

**Malpractice: Radium Treatment of Facial Blemish Allegedly Resulting in Burns.**—In 1922 the plaintiff, when 4 years old, developed on her forehead a pinkish area which was diagnosed by a physician as a birthmark. She was taken to the defendant physician, a dermatologist, who attempted to remove the blemish with radium. Following the second treatment, which according to the plaintiff's evidence occurred two weeks after the first treatment, the part of the plaintiff's forehead to which the radium had been applied assumed a burned or seared appearance, with a cracking and discoloration of the skin. The condition grew progressively worse and seriously affected the skin and the underlying bone structure in a manner plainly discernible. Attributing the resultant condition to the defendant's negligence in applying the radium treatment, the plaintiff sued. At the close of the plaintiff's case the trial court, on motion of counsel for the defendant, withdrew the case from the jury and gave judgment for the defendant. The court of appeals, Ohio, affirmed that judgment and the plaintiff appealed to the Supreme Court of Ohio.

A motion for a directed verdict, said the court, accepts as true every fact offered in evidence by the plaintiff with the reasonable inferences deducible therefrom. The defendant, called for cross examination, admitted it would be "inadvisable" to give treatments of the kind to which the plaintiff had been subjected oftener than three weeks apart and asserted that in the plaintiff's case three months should have intervened between treatments. He maintained, however, that a period of three months did actually transpire between the first and second treatment, and that the affliction concerning which the plaintiff complained was not due to a burn but to a disease known as scleroderma. On the other hand, the plaintiff's father and grandmother testified positively that a space of but two weeks elapsed between the first and the second radium treatment. Two dermatologists took the stand as plaintiff's witnesses but on cross examination they testified that their present opinion was that the plaintiff's blemished forehead was the result of scleroderma and not of a burn. Another medical witness for the plaintiff testified that in his opinion the condition of the forehead was due to a radium burn, "the second treatment being given too near the first treatment; there was evidently an accumulative condition in her case after the first treatment of radium, and the burn resulted." This witness could discover no indication of scleroderma. At the instance of the trial judge, and by agreement of counsel, a professor of pathology in the medical school of Western Reserve University became a witness. "In my opinion," said this witness, "that is not a radium burn, and is more like a scleroderma than any other disease I know." On examination by counsel for the plaintiff, this witness admitted there was some evidence of a radium burn, and that a previous written report in the matter, prepared by his assistant, contained a diagnosis of cutaneous cicatrix or skin scar. Viewing the plaintiff's evidence in the light most favorable to her claim, she presented, in the opinion of the court, a chain of circumstances and events from which the ultimate facts of negligence and proximate cause could be reasonably inferred. The plaintiff having thus made a prima facie case, it was reversible error for the trial court to take the case from the jury and render judgment for the defendant.

The trial court did not err in declining to permit counsel for the plaintiff to interrogate the two dermatologists, who testified for the plaintiff, regarding the opinion held by them as to the

cause of the plaintiff's affected forehead at a time prior to their advent as witnesses at the trial. These physicians, the court said, took the stand as plaintiff's witnesses, and the record suggests that counsel for the plaintiff had been advised by them before they were called that their ultimate opinion was unfavorable to the plaintiff's contention. Medical experts, said the court, should state the opinions they hold at the time they testify, rather than the opinions held at some previous time.

The judgments of the trial court and of the intermediate appellate court were reversed and the cause remanded to the trial court for further proceedings.—*Hubach v. Cole (Ohio)*, 12 N. E. (2d) 283.

**Libel: Imputation of Tuberculosis Not Actionable Per Se.**—A newspaper item, in discussing the situation at a state tuberculosis sanatorium, contained a statement that "there are a number of persons employed there, including part-time doctors, who are so-called arrested cases of tuberculosis." There were four part-time physicians employed at the sanatorium and one of them, the plaintiff in this case, instituted an action for libel against the newspaper. The trial court sustained a demurrer interposed by the defendant and the plaintiff appealed to the Supreme Court of Wisconsin.

The newspaper item, said the Supreme Court, did not refer specifically to the plaintiff by name nor did it state that all of the part-time physicians had tuberculosis. The plaintiff, therefore, was not, in the opinion of the court, sufficiently identified to entitle him to sue. Furthermore, to charge that a person has an arrested case of tuberculosis is not actionable per se; special damages must be alleged and proved. The complaint in this case alleged no special damages and for that reason the trial court committed no error in sustaining the demurrer.—*Kassowitz v. Sentinel Co. (Wis.)* 277 N. W. 177.

## Society Proceedings

### COMING MEETINGS

- American Association for the Study of Gout, Washington, D. C., Sept. 12-14. Dr. W. Blair Mosser, 133 Biddle St., Kane, Pa., Secretary.
- American Association of Obstetricians, Gynecologists and Abdominal Surgeons, White Sulphur Springs, W. Va., Sept. 22-24. Dr. James R. Bloss, 418 Eleventh St., Huntington, W. Va., Secretary.
- American Association of Railway Surgeons, Chicago, Sept. 19-21. Dr. Daniel B. Moss, 547 W. Jackson Blvd., Chicago, Secretary.
- American Congress of Physical Therapy, Chicago, Sept. 12-15. Dr. Richard Kovacs, 1100 Park Ave., New York, Secretary.
- American Hospital Association, Dallas, Texas, Sept. 26-30. Dr. Bert W. Caldwell, 18 East Division St., Chicago, Executive Secretary.
- American Roentgen Ray Society, Atlantic City, N. J., Sept. 20-23. Dr. Carleton B. Peirce, University Hospital, Ann Arbor, Mich., Secretary.
- Clinical Orthopedic Society, Nashville, Tenn., and Birmingham, Ala., Oct. 7-8. Dr. H. Earle Conwell, 214 Medical Arts Bldg., Birmingham, Ala., Secretary.
- Colorado State Medical Society, Estes Park, Sept. 7-10. Mr. Harvey T. Sethman, 537 Republic Bldg., Denver, Executive Secretary.
- Idaho State Medical Association, Sun Valley, Sept. 6-10. Dr. Harold W. Stone, 105 North Eighth St., Boise, Secretary.
- Indiana State Medical Association, Indianapolis, Oct. 4-6. Mr. Thomas A. Hendricks, 23 East Ohio St., Indianapolis, Executive Secretary.
- Kentucky State Medical Association, Louisville, Oct. 3-6. Dr. Arthur T. McCormack, 620 South Third St., Louisville, Secretary.
- Michigan State Medical Society, Detroit, Sept. 19-22. Dr. L. Fernald Foster, 311 Center Ave., Bay City, Secretary.
- Mississippi Valley Medical Society, Hannibal, Mo., Sept. 28-30. Dr. Harold Swanberg, 510 Main St., Quincy, Ill., Secretary.
- National Medical Association, Hampton, Va., Aug. 15-19. Dr. John T. Givens, 1108 Church St., Norfolk, Va., General Secretary.
- Nevada State Medical Association, Reno, Sept. 23-24. Dr. Horace J. Brown, 120 N. Virginia St., Reno, Secretary.
- Northern Minnesota Medical Association, Crookston, Aug. 29-30. Dr. J. F. Norman, Crookston, Secretary.
- Oregon State Medical Society, Timberline Lodge, Aug. 24-27. Dr. Morris L. Bridgeman, 1020 S.W. Taylor St., Portland, Secretary.
- Pennsylvania, Medical Society of the State of, Scranton, Oct. 3-6. Dr. Walter F. Donaldson, 500 Penn Ave., Pittsburgh, Secretary.
- Society of American Bacteriologists, San Francisco, Aug. 30-Sept. 1. Dr. I. L. Baldwin, College of Agriculture, University of Wisconsin, Madison, Wis., Secretary.
- Utah State Medical Association, Ogden, Sept. 1-3. Dr. D. G. Edmunds, 610 McIntyre Bldg., Salt Lake City, Secretary.
- Vermont State Medical Society, Burlington, Oct. 6-7. Dr. B. F. Cook, 154 Bellevue Ave., Rutland, Secretary.
- Virginia, Medical Society of, Danville, Oct. 4-6. Miss Agnes V. Edwards, 1200 East Clay St., Richmond, Secretary.
- Washington State Medical Association, Bellingham, Aug. 29-31. Dr. W. W. Spickard, 1303 Fourth Ave., Seattle, Secretary.
- Wisconsin State Medical Society of, Milwaukee, Sept. 13-16. Mr. J. G. Crownhart, 119 East Washington Ave., Madison, Secretary.

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1928 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

#### Am. J. Syphilis, Gonorrhea and Ven. Dis., St. Louis

22: 401-536 (July) 1938

- \*Infectiousness of Semen of Patients with Late Syphilis: Experimental Study. J. E. Kemp, Chicago.—p. 401.
- Serologic Reactions and Immunity in Relation to Infection and Treatment of Syphilis. J. A. Kolmer, Philadelphia.—p. 426.
- \*Appraisal of Laughlen Serologic Test for Syphilis. G. S. Usher, Baltimore.—p. 452.
- Method for Quantitation of Inoculums in Experimental Syphilis. H. J. Morgan and G. P. Vryonis, Nashville, Tenn.—p. 462.
- Further Experiences with Mapharsen; Its Use in Latent Syphilis. G. D. Astrachan and F. Wise, New York.—p. 470.
- Experimental Contribution to Study of Antisyphilitic Hyperthermy Produced by Physical Agents. A. Bessemans, Ghent, Belgium.—p. 478.
- Role of Biopsy in Diagnosis of Venereal Diseases: Histologic Differentiation of Venereal Granuloma and Lymphogranuloma and Chancroid. E. R. Fund, R. B. Greenblatt and Georgia Brawner Huie, Augusta, Ga.—p. 495.
- Spirochetes in the Brain in General Paresis in Jamaica. G. M. Saunders, Kingston, Jamaica, British West Indies.—p. 503.
- Syphilis in Dependent Mothers. Helen Harrington and L. J. Matschat, New York.—p. 513.

**Semen of Patients with Late Syphilis.**—In an experimental study of the infectiousness of the semen in late syphilis, Kemp inoculated rabbits intratesticularly with fifteen specimens of semen from fifteen different persons, all with syphilis of a duration of four years or more. In an attempt to evaluate the experimental methods of Kertesz, five of the fifteen specimens of semen were collected aseptically and portions of each were inoculated into the posterior chamber of one eye of each of the two rabbits which received the intratesticular inoculation. The control groups comprised rabbits inoculated in the posterior chamber with the semen collected aseptically from four nonsyphilitic persons and rabbits inoculated in the same manner with material collected under cleanly but not aseptic conditions from four nonsyphilitic persons. Except that the ophthalmia acquired by the animals inoculated with the semen that was not collected aseptically was somewhat more severe, there was little difference in the appearance of the eyes of the animals inoculated with the semen of syphilitic and nonsyphilitic individuals. The contentions of Kertesz that inoculation of the posterior chamber of the eye is to be preferred to other methods of inoculation were not confirmed. A review of the available literature shows that, including the present fifteen cases, the semen of 144 persons with syphilis has been investigated for the presence of spirochetes. Sixty-seven persons had early syphilis (syphilis of four years or less) and fifty-two had syphilis longer than four years. Spirochetes were demonstrated in the semen of thirteen of the former group. The majority of this group had untreated florid secondary syphilis or infectious mucocutaneous relapses. In contrast, in only one instance were spirochetes demonstrated in the semen of the fifty-two persons with late syphilis. Because of insufficient data, it was not possible to determine accurately the influence of treatment on the presence of the spirochetes in the semen of the fifty-two patients with late syphilis. Of the fifteen patients in the author's group about whom this information was available, approximately one half were untreated. The semen of all fifteen was noninfectious for rabbits.

**The Laughlen Test for Syphilis.**—Usher states that the Laughlen test gave an excessive number of positive reactions on 181 presumably nonsyphilitic persons. When the sensitivity

of the reagent was reduced sufficiently to eliminate these falsely positive reactions, it failed in a significant number of instances to detect reagin in serums which were positive to the Eagle flocculation reaction. It is concluded that the Laughlen serologic test for syphilis may be of value in a reliable laboratory as a spot or exclusion test but is not a satisfactory test to be used by a "medical practitioner or technician without special training" (as claimed by Laughlen).

#### Annals of Surgery, Philadelphia

108: 1-160 (July) 1938

- Insensible Loss in Surgical Patients. W. W. Fuge, Buffalo, and B. M. Hogg, New York.—p. 1.
- Excision of Axillary Vein in Radical Operation for Carcinoma of the Breast. H. Neuhof, New York.—p. 15.
- Postoperative Roentgenotherapy in Cancer of the Breast. W. C. White, New York.—p. 21.
- Peptic Ulcer. A. J. Present, La Jolla, Calif.—p. 32.
- \*Changing Methods in Surgical Treatment of Peptic Ulcer: Study of Cases Operated on at the Roosevelt Hospital, New York. C. W. Cutler Jr., New York.—p. 68.
- Gastro-Enterostomy. C. Eggers, New York.—p. 84.
- Postoperative Jejunal Ulcer: Study of Twenty-Three Cases Operated on at the Presbyterian Hospital, New York. A. Grossman, Chicago.—p. 105.
- Fusion in Charcot's Disease of the Knee: New Technic for Arthrodesis. R. Soto-Hall, San Francisco.—p. 124.
- Intramedullary Pressure, with Particular Reference to Massive Diaphysal Bone Necrosis: Experimental Observations. R. M. Larsen, Nashville, Tenn.—p. 127.
- \*Effect of Direct Application of Cod Liver Oil on Healing of Ulcers of the Feet in Patients with Diabetes Mellitus. H. Brandaleone, New York.—p. 141.

**Treatment of Peptic Ulcer.**—Cutler points out that since Peck's report (medical treatment of peptic ulcer), that is from 1924 through 1937, 262 patients have been operated on at the Roosevelt Hospital (269 operations) for chronic ulcers of the stomach and duodenum, exclusive of operations for acute perforations of primary ulcers. It is of interest to observe that year by year the number of operations performed for these conditions has gradually diminished, and this without a significant diminution of the number of cases admitted. In 1926 there were forty-six such operations, in 1936 but twelve. This change has been due primarily to the increasing recognition of the fact that careful medical management is capable of relieving or controlling a considerable number of these cases. Surgery is indicated only in cases in which the medical regimen has failed or in which complications have resulted. All cases of chronic peptic ulcer are now considered as medical problems primarily and the patients are admitted directly to the medical wards. Not only is no patient now operated on at the Roosevelt Hospital for chronic peptic ulcer without having had a thorough, controlled and efficient course of medical management; but each patient for whom operation is proposed must be passed on by a "court" consisting of physician, surgeon, gastro-enterologist and roentgenologist. The type of operation to be employed in each case is determined by certain guiding principles: 1. The operation must be of such a nature that the particular patient can tolerate and survive it. 2. Not only should it aim at alleviation of symptoms, but it should give freedom from likelihood of recurrence or of complications, both early and late. 3. The ideal procedure having been determined, it should be abandoned or modified if the condition found at operation warrants. The pursuit of the foregoing policies and practices is encouraged by the early results in the present group of cases. The fourteen year period covered by the report shows a mortality in Polya and Billroth II resections, for all types of primary peptic ulcer, of 9.3 per cent. This compares favorably with the 8.5 per cent mortality of gastro-enterostomies during the same period, when one considers the 16 per cent of recorded late poor results with gastro-enterostomy, as against the 3 per cent of poor results with resection. These figures do not take into account the cases of secondary complications.

**Cod Liver Oil and Ulcers of Feet.**—Brandaleone observed two groups of diabetic patients; one a control group of eleven patients who received routine foot care (article on procedure abstracted in *THE JOURNAL* Feb. 27, 1937, page 760) and group 2, consisting of twenty-one patients who had received



cally to both *Bacillus pertussis* and *Bacillus bronchisepticus*, these cultures are identical with neither. Their significance in connection with whooping cough is not yet clear. For convenience of reference, the name *Bacillus parapertussis* is used.

### Journal of Experimental Medicine, New York

68: 1-146 (July) 1938

- Hormone Studies with Ultracentrifuge: I. Improved Air-Driven Vacuum Ultracentrifuge Suitable for Concentration Work in Biologic Experiments. J. A. Chiles Jr. and Aura E. Severinghaus, New York.—p. 1.
- Effect of Repeated Superinfection on Potency of Immune Serum of Monkeys Harboring Chronic Infections of *Plasmodium knowlesi*. L. T. Coggeshall and H. W. Kumm, New York.—p. 17.
- Quantitative Relationship Between Immune Serum and Infective Dose of Parasites as Demonstrated by Protection Test in Monkey Malaria. L. T. Coggeshall and M. D. Eaton, New York.—p. 29.
- \*Fate of Nasally Instilled Poliomyelitis Virus in Normal and Convalescent Monkeys, with Special Reference to the Problem of Host to Host Transmission. A. B. Sabin and P. K. Olitsky, New York.—p. 39.
- Vital Staining of Connective Tissues. L. S. King, Princeton, N. J.—p. 63.
- Quantitative Studies of Brucella Precipitin Systems: I. Precipitation of Homologous Antisera by Brucella Endo-Antigens. R. B. Pennell and I. F. Huddleson, East Lansing, Mich.—p. 73.
- Id.: II. Precipitation of Heterologous Antisera by Brucella Endo-Antigens. R. B. Pennell and I. F. Huddleson, East Lansing, Mich.—p. 83.
- Immunization of Guinea Pigs Against Lymphocytic Choriomeningitis with Formolized Tissue Vaccines. E. Traub, Princeton, N. J.—p. 95.
- Immunity of Mice Following Subcutaneous Vaccination with St. Louis Encephalitis Virus. L. T. Webster, New York.—p. 111.
- Cutaneous Infectivity in Experimental Poliomyelitis: Increased Susceptibility After Neurosurgical Procedures. W. J. German and J. D. Trask, New Haven, Conn.—p. 125.

**Nasally Instilled Poliomyelitis Virus.**—With a method of intranasal instillation of poliomyelitis virus that brings about infection of all *Macacus rhesus* monkeys subjected to it, Sabin and Olitsky determined the fate of nasally instilled virus in normal and convalescent immune animals. Control experiments revealed that the nasal mucosa of normal monkeys contained no observable antiviral factors and that virus could be detected when five or ten minimal cerebral infective doses were added to the mucosa. In the olfactory bulbs even a single infective dose could be recovered, since suspensions of both bulbs could be transferred to the brain of a monkey without any loss of material. After nasal instillation of virus in normal monkeys it disappeared quickly (four hours or less) and could be recovered neither from the excised nasal mucosa nor from the olfactory bulbs during the first forty-eight hours. At seventy-two hours, just before or coincident with the first rise of temperature, virus was found in small amounts in the nasal mucosa and for the first time also in the olfactory bulbs. At ninety-six hours, at least three days before the appearance of nervous signs, and later, while virus continued to be present in considerable amounts in the olfactory bulbs (and presumably elsewhere in the central nervous system), none was detected in the nasal mucosa. In convalescent immune animals receiving the same strain of virus intranasally which caused the original infection, none could be recovered from the nasal mucosa or central nervous system at four hours or one, two, three, four, five and seven days. The possible significance of these data from an epidemiologic point of view is in the suggestion that persons who are immune because of a previous attack of the disease (not to be confused with natural resistance, which perhaps determines whether an attack of poliomyelitis will be apparent or inapparent) may no longer act as transmitters of the same strain or type of virus infection.

### Journal Industrial Hygiene & Toxicology, Baltimore

20: 389-456 (June) 1938

- Experimental Study of Heat Collapse. J. S. Weiner, Johannesburg, South Africa.—p. 389.
- Ventilation of Wire Impregnating Tanks Using Chlorinated Hydrocarbons. C. P. Yaglou, F. W. Sands and P. Drinker, Boston.—p. 401.
- Studies on Phenothiazine: VI. General Toxicity and Blood Changes. J. O. Thomas, J. B. McNaught and F. DeEds, San Francisco.—p. 419.
- Toxicity of Isopropanol. H. J. Morris and H. D. Lighthody, Washington, D. C.—p. 428.
- Experimental Investigations Concerning Liability to Silicosis Among Workmen in Iron Mines. C. Naeslund, Stockholm, Sweden.—p. 435.

### Journal of Nervous and Mental Disease, New York

88: 1-140 (July) 1938

- Concrete Model and Abstract Copy: Psychobiologic Interpretation of "Closing-In" Symptom of Mayer-Gross. W. Muncie, Baltimore.—p. 1.
- Phenomenon of Transference in Case of Phobia (Anxiety Hysteria). F. Wittels, New York.—p. 12.
- Clinical Syndromes of Echolalia, Echopraxia, Grasping and Sucking: Their Significance in Disorganization of Personality. D. E. Schneider, New York.—p. 18.
- Use of Histamine Phosphate and Peptone Solution in Treatment of Neuroses and Psychoses: Preliminary Report. W. Marshall and J. S. Tarwater, Appleton, Wis.—p. 36.
- Multiple Sclerosis: I. Etiologic Significance of Regional and Occupational Incidence. G. Steiner, Detroit.—p. 42.

### Journal of Urology, Baltimore

40: 1-268 (July) 1938. Partial Index

- Surgery of Horseshoe Kidney with Post-aortic Isthmus: Report of Two Cases of Horseshoe Kidney. W. D. Jarman, Washington, D. C.—p. 1.
- New Method for Instrumental Dilatation of Ureter. J. E. Dees, Baltimore.—p. 24.
- \*Similarity of Interstitial Cystitis (Hunner Ulcer) to Lupus Erythematosus. G. M. Fister, Ogden, Utah.—p. 37.
- Cardiosclerosis Complicating Prostatism. W. S. Middleton, Madison, Wis.—p. 55.
- Secretion of Alcohol by Genital Tract: Experimental Study. J. I. Farrell, Evanston, Ill.—p. 62.
- Tuberculosis of the Male Genital Tract: Pathologic Study. J. G. Menville and J. T. Priestley, Rochester, Minn.—p. 66.
- Cystoscopic Removal of Large Ureteral Calculi. E. P. Alyea, Durham, N. C.—p. 83.
- Obstructions at Vesical Neck in Children. O. Grant, Louisville, Ky.—p. 114.
- Hormone Treatment of Benign Prostatic Hyperplasia. H. W. E. Walther and R. M. Willoughby, New Orleans.—p. 135.
- Influence of Anterior Pituitary-like Principle on External Genitalia of Young Boys. W. O. Thompson, N. J. Heekel and A. D. Bevan, Chicago.—p. 145.
- \*Clinical Experiments with Use of Male Sex Hormones: I. Use of Testosterone Propionate in Hypogonadism. S. A. Vest Jr. and J. E. Howard, Baltimore.—p. 154.
- Recurrent Renal Lithiasis: Review of 100 Cases. C. C. Higgins, Cleveland.—p. 184.
- Sodium R-Lactate Therapy in Acidosis of Renal Origin. R. Deakin, St. Louis.—p. 193.
- Orchitis and Epididymitis Due to Undulant Fever. A. G. Isaacs, Newton, Kan.—p. 201.
- Use of Sulfanilamide in Genito-Urinary Infections. C. McMartin, W. H. Schmitz and W. J. McMartin, Omaha.—p. 233.

**Interstitial Cystitis and Lupus Erythematosus.**—Fister states that a study of interstitial cystitis and lupus erythematosus shows that the two disorders seem to have many points in common and suggests that they are possibly phases of the same disease—the one occurring in the wall of the urinary bladder, the other in the skin. Interstitial cystitis and lupus erythematosus usually appear in the second to the fourth decades of life. Both diseases are more common in women than in men by a ratio of about 3:1. The two diseases appear to be about equally rare. It is difficult to explain why more cases of interstitial cystitis are seen in this country unless it is that physicians are learning to diagnose the disease more frequently in its early stages. Neither interstitial cystitis nor lupus erythematosus is caused by an invasion of the diseased tissue with tubercle bacillus. Lupus erythematosus in many cases, however, is found associated with tuberculosis, but the local lesion has none of the characteristics of tuberculosis of the skin. The theory of multiple etiology of lupus erythematosus is rather generally accepted and tuberculosis may be the focus of absorption in some cases. Interstitial cystitis is definitely a nontuberculous infection of the bladder, but in many cases the symptoms are suggestive of tuberculosis and it is important to rule out tuberculosis of the urinary tract. It is possible that a distant tuberculous infection may act as the foci of toxin for the vesical involvement. It is now generally agreed that the two diseases are the result of absorption of toxins from some focus of infection, and one of these may be tuberculosis. Infected teeth, tonsils, nasal sinuses, infections of the urinary tract or local pelvic infections may all be endogenic sources of toxin absorption. The toxin theory, however, does not explain all conditions, nor does the removal of an evident focus of infection cure all cases. Trauma, external irritations of the skin, a weak peripheral circulation, associated cyanosis, telangiectasis, chilblains and circulatory disturbances are apparently exogenic factors in some cases of lupus

erythematosis, while infections of the urinary tract, urethritis, stricture of the ureter, perhaps childbirth, injury of the bladder, pelvic infections or circulatory changes in the wall of the bladder must be considered as possible additional factors in interstitial cystitis. The histopathologic changes of the two diseases are similar, but neither is of a specific character. Both have the characteristics of a chronic inflammation. The changes in the epidermis in lupus erythematosus are secondary to those in the corium and the changes in the mucous membrane in interstitial cystitis are secondary to those in the submucosa. Early in both diseases there is fibrous tissue hyalinization and fragmentation of the elastic tissue. In older lesions of lupus erythematosus, because of the progressive early changes, there results atrophy of the sweat and sebaceous glands, plugging of the follicles and atrophy of the epidermis, with an increase of the connective tissue and cicatricial formations. The later changes in interstitial cystitis consists of atrophy of the epithelium, various degrees of degeneration and ulcer formation. There is also proliferation of the connective tissue in the submucosa resulting in contraction of the vesical wall and cicatrization. Peripheral spreading of the infiltration with central degenerative changes occurs in the two conditions. Treatment of interstitial cystitis and lupus erythematosus has been along similar lines.

**Testosterone Propionate in Hypogonadism.**—Vest and Howard employed androgen (testosterone propionate) in five cases of primary testicular insufficiency due to castration, atrophy following trauma or an inherent defect in the testes and in one case of gonadal insufficiency secondary to demonstrable disease of the pituitary. Because of the known wide variation in the age of sexual maturation in man, their patients were only those with hypogonadism who were well past the normal age period of adolescence. Androgen seems to be a satisfactory replacement therapy for hypogonadism in the human being. It produces profound anatomic changes resulting in the proportionate growth of the phallus, scrotum, seminal vesicles and prostate, as well as development of pubic, axillary and extremity hair. There have been laryngeal changes (change to a more masculine voice), the appearance of considerable prostatic secretion and an ejaculum with coitus, and marked changes in the skin. There have been, in addition, changes in the general appearance, with improvement in the personality content. It has induced libido and potentia in persons in whom these had not existed previously, and restored normal sex life in a patient who was impotent following castration. No evidence of increase in tolerance to the drug has been observed.

### Medical Annals of District of Columbia, Washington

7:171-206 (June) 1938

- Sulfanilamide Therapy from a Pharmacologic Point of View. G. B. Roth, Washington.—p. 171.  
Advances in Study of Coronary Artery Disease. L. T. Gager, Columbia, S. C.—p. 180.  
\*Studies on Oxyuriasis: XV. Study of 504 Boys in a Boy's Camp. J. Bozicevich and F. J. Brady, Washington.—p. 187.  
The "Acute Abdomen" in Children. E. A. Cafritz, Washington.—p. 191.  
Syphilis and Crime. G. W. Creswell, Washington.—p. 194.  
Vestibular (Bárány) Tests: Their Diagnostic Value in Labyrinthine and Intracranial Diseases. V. R. Alfaro, Washington.—p. 197.

**Oxyuriasis.**—One of the authors (Bozicevich) has reported an oxyuriasis incidence of 31.3 per cent on positive cases found by using only one NIH swab (stroking the perianal region with a glass rod tipped with a small square of cellophane and then examining the cellophane microscopically for pinworm eggs) on each of 230 boys at the Washington metropolitan police boys' camp during the summer of 1936. The investigation has been made again by Bozicevich and Brady during the summer of 1937 at the same camp, this time using repeated swabbings instead of one swabbing on 504 boys. Swabs were made on the boys the first thing in the morning before washing or defecating and often before dressing. Four swabbings were used in the examination of 329 boys, three swabbings for thirty-eight boys and two swabbings for 138 boys. In all, 289 persons harboring pinworms were found, an incidence of 57.3 per cent. Of these positives, 68 per cent of the cases were

found by the first swab; repeated examinations revealed the remaining 32 per cent. Swabs not taken on consecutive days will reveal more cases than the same number of swabs taken consecutively. Analysis of the incidence according to age does not show a definite correlation but suggests that the incidence begins to decline after the age of 14. Of the negative group the average family size was 5.5 and of the positive group 6.65. Large families appear to be a factor predisposing to a high incidence.

### Military Surgeon, Washington, D. C.

83:1-112 (July) 1938

- Development of International Cooperation Among the Health Authorities of the American Republics. H. S. Cumming.—p. 1.  
Submarine Medicine. A. R. Behnke.—p. 6.  
Contributions of the World War to Advancement of Medicine. I. J. Frisch.—p. 19.  
Sulfanilamide in Treatment of Infectious Diseases. K. A. Brewer and E. P. Campbell.—p. 50.  
Physical Therapy in the Next War. C. L. Lowman.—p. 63.  
Modern Treatment of Typhoid Fever. A. G. Bower.—p. 70.  
Combined Treatment of Meningococcal Meningitis with Meningococcus Antitoxin and Sulfanilamide: Case Reports. F. G. Norbury.—p. 76.  
Value of Repeated Small Direct Blood Transfusions and Simplified Method Therefor. F. F. Rudder.—p. 79.  
Importance of Psychiatry in Military Medicine. B. A. Strickland Jr.—p. 83.  
Some Contributions of Military Surgeons to Medicine. H. A. Van Auken.—p. 88.

### Missouri State Medical Assn. Journal, St. Louis

35:197-232 (June) 1938

- History of the Missouri State Medical Association: Address of the President. D. S. Conley, Columbia.—p. 197.  
Some Medical Side Lights: Address of the President-Elect. B. W. Hays, Jackson.—p. 201.  
Carcinoma of the Colon and Rectum: Surgical Discussion. R. V. Byrne, St. Joseph.—p. 205.  
Diarrhea in Young People. E. J. Nienstedt, Sikeston.—p. 210.  
Diabetes Mellitus with Lipemia Retinalis: Report of Case. A. W. McAlester 3d, M. L. Pepper and L. S. Milne, Kansas City.—p. 212.  
New Treatment for Chronic Prostatitis and Seminal Vesiculitis. P. B. Nussbaum, Cape Girardeau.—p. 213.  
Myoma of the Vagina. W. Bernart, St. Louis.—p. 215.

### New England Journal of Medicine, Boston

218:991-1032 (June 16) 1938

- Observations of a Rural Health Worker. A. Stampar.—p. 991.  
\*Localization of Intracranial Lesions by Electro-Encephalography. D. Williams, London, England, and F. A. Gibbs, Boston.—p. 998.  
Observations on Convulsant Treatment of Schizophrenia with Metrazol: Report of Seven Cases. L. H. Cohen, Worcester, Mass.—p. 1002.  
Spontaneous Thyroid Storm Associated with Diabetic Acidosis and Paralytic Ileus: Report of Case with Autopsy Findings. E. Deutsch, Boston.—p. 1007.  
Incidence of Tuberculous Infection in Surgically Removed Tonsils. L. Alpert, Middleboro, Mass.—p. 1011.

**Localization of Intracranial Lesions.**—In order to ascertain the value of electro-encephalography, Williams and Gibbs used the method in eighty unselected patients suspected of having intracranial lesions. The oscillograph records were made with an ink-writing instead of with a cathode ray oscillograph as used by Walter. Fifty of the patients gave abnormal cortical potentials with evidence of focal disturbance. The oscillograph records of seventeen patients showed no cortical abnormality, and in thirteen the records were characteristic of epilepsy, without any evidence of a constant focus of discharge of slow waves. In thirteen of the fifty patients with foci of abnormal discharge operation was not performed, and the clinical diagnosis was too indefinite to verify the accuracy of the observations. In the remaining thirty-seven cases verification of the position of the abnormality was possible. In twenty-two the lesion was seen at operation or necropsy, in ten its position was established by unequivocal clinical observations, confirmed in four by x-ray evidence and in five a bone defect was present in the skull as a result of previous trauma. In every one of these thirty-seven cases the position of the single focus of abnormal discharge corresponded closely with the site of the organic lesion. In the twenty-two cases in which the cerebral lesion was seen the correlation of the electro-encephalogram with the operative and postmortem observations was striking.

**New Orleans Medical and Surgical Journal**

90: 697-772 (June) 1938

- State Medicine: Presidential Address. C. M. Horton, Franklin, La.—p. 697.
- Endocrine Deficiency in Syphilis. R. Hosen, Port Arthur, Texas.—p. 707.
- Relationship of Rheumatic Fever to Subacute Bacterial Endocarditis. J. A. Holmes, New Orleans.—p. 711.
- Low Cervical Cesarean Section. J. F. Dicks, New Orleans.—p. 720.
- Classic Cesarean Section. P. J. Carter, New Orleans.—p. 723.
- Preoperative and Postoperative Care and Complications of Cesarean Section. C. G. Collins, New Orleans.—p. 725.
- Cesarean Section: Summary. H. E. Miller, New Orleans.—p. 726.
- Review of the Cesarean Sections Performed in New Orleans During the Years 1927-1936, Inclusive. E. L. King, J. F. Dicks, J. W. Reddoch, M. L. Stadlern, E. L. Zander, H. Meyer and E. P. McCormick, New Orleans.—p. 731.

**New York State Journal of Medicine, New York**

35: 917-968 (June 15) 1938

- Carcinoma and Adenoma of the Rectum. R. C. Page, Tuckahoe.—p. 917.
- Unusual Complication of Labor. F. A. Minas and D. J. Granbard, New York.—p. 920.
- The Cinderella of Medicine. K. A. Menninger, Topeka, Kan.—p. 922.
- Trigger Finger. C. W. Henson, New York.—p. 926.
- Fibroma of the Ovary. J. F. Curran, R. H. Goodale and E. T. Crane, Worcester, Mass.—p. 927.
- Hypodermic Needle in Stomach Wall. R. S. Rosedale, Buffalo.—p. 928.
- Hemolytic Streptococcus Meningitis: Recovery in Case. B. Schwartz, New York.—p. 929.

**Public Health Reports, Washington, D. C.**

53: 935-960 (June 10) 1938

- Effect of Moisture and Age on Stability of Neosarsphenamine. T. F. Proby and W. T. Harrison.—p. 939.
- \*Effect of Age of Neosarsphenamine on Reaction Expectancy. C. S. Stephenson, T. F. Proby and W. T. Harrison.—p. 945.
- Flea Infestation of Domestic Rats in San Francisco, Calif. C. R. Eskey.—p. 948.

**Reaction Expectancy of Neosarsphenamine.**—According to Stephenson and his colleagues, the analysis of 541,381 administrations of neosarsphenamine to human beings from all medical services of the United States Navy, over a continuous period of five years, shows that the reaction expectancy increases with the age of the material. This clinical experience agrees with the laboratory observation that neosarsphenamine changes with age.

53: 961-1002 (June 17) 1938

- Prevention and Control of Cancer: A Plan for Nationwide Organization. J. W. Schereschewsky.—p. 961.
- \*Effects of Intramuscular Injections of Vitamin B<sub>1</sub> on Acute Leprous Neuritis and of Oral Administration of General Disease: Preliminary Report. L. F. Badger and D. W. Patrick.—p. 969.
- Studies on Oxyuriasis: XVI. Number of Eggs Produced by Pinworm, Enterobius Vermicularis, and Its Bearing on Infection. Lucy Reardon.—p. 978.
- Rocky Mountain Spotted Fever: Geographic and Seasonal Prevalence, Case Fatality and Preventive Measures. B. C. Hampton and H. G. Eubank.—p. 984.

**Vitamin B<sub>1</sub> in Leprous Neuritis.**—During the last six months Badger and Patrick treated ten patients who had rather severe acute leprosy neuritis of the peripheral nerves with intramuscular injections of thiamin chloride. The injections were begun as soon as possible after the onset of symptoms or when the patient first complained of pain. The procedure followed was to give 300 international units once a day by intramuscular injection and twice a day by mouth. In the seven cases in which the injections were begun on the day of onset, the pain disappeared completely twenty-four hours after the first injection in four, in forty-eight hours in one and on the fourth day in another. In one case, owing to a required emergency treatment, the injections were discontinued after two had been given and on the third day the pain was moderate, after which it continued to lessen in severity until the seventh day, when it was no longer present. Tenderness could no longer be elicited after twenty-four hours in one and after three or four days in all but the one case in which the treatment was interrupted. In this case no tenderness could be elicited on the seventh day. In each case the tenderness was less marked twenty-four hours after the first injection. Definite diminution in the swelling occurred about the time the tenderness disappeared. In one case the injection treatment was begun on the second day of symptoms, and twenty-four hours later the pain lessened definitely. The pain disappeared entirely after

three injections, and after four injections the tenderness disappeared completely. In two cases the injections were begun on the fourth and fifth days of symptoms. In the former the response to treatment was not as abrupt and the improvement was not sharply defined from day to day. In the other case the results were about as prompt as in the majority of the cases.

**Southwestern Medicine, El Paso, Texas**

22: 209-252 (June) 1938

- Medical Problems in New Mexico. E. W. Fiske, Santa Fe, N. M.—p. 209.
- Selective Extrascapular Pneumothorax: Preliminary Study. J. W. Fliinn and J. H. Allen, Prescott, Ariz.—p. 211.
- Another Method of Pinning Fractures of Neck of Femur. J. M. Greer, Phoenix, Ariz.—p. 213.
- Occurrence of Peptic Ulcer. F. J. Milloy, Phoenix, Ariz.—p. 215.
- Poliomyelitis: Review. A. P. Black, El Paso, Texas.—p. 218.
- Adequate Treatment of Syphilis. E. C. Fox, Dallas, Texas.—p. 223.
- The Management of Serious Cases of Craniocerebral Injury. A. S. Crawford, Detroit.—p. 226.
- Fever Treatment of Syphilis. H. M. Purcell, Phoenix, Ariz.—p. 229.

**Tennessee State Medical Assn. Journal, Nashville**

31: 209-250 (June) 1938

- Meckel's Diverticulum: Report of Five Cases. B. McSwain, Paris.—p. 209.
- Common Errors in the Management of the Cardiac Patient. W. R. Cate, Nashville.—p. 216.
- Present Day Concept of Nephritis. C. A. Hartung, Chattanooga.—p. 222.
- Self-Inflicted Skin Lesions. H. King and C. M. Hamilton, Nashville.—p. 229.
- Near Death While Swimming, Due to Allergy to Heat and Effort. G. D. Grubb, Knoxville.—p. 234.

**Virginia Medical Monthly, Richmond**

65: 381-448 (July) 1938

- The Management of Some Common Skin Diseases by the General Practitioner. M. B. Sulzberger, New York.—p. 381.
- Coronary Thrombosis in a Twenty-Seven Year Old Man. E. G. Scott, Lynchburg.—p. 391.
- Acute Coronary Thrombosis. H. Golston, Arlington.—p. 395.
- Treatment of Burns in the Home. M. H. Harris, West Point.—p. 403.
- \*Hypodermic Use of Adrenalin for Differential Diagnosis Between Acute Pylorospasm and Ruptured Peptic Ulcer. J. T. Wolfe, Washington, D. C.—p. 405.
- Insulin Shock Treatment of Dementia Praecox. F. A. Strickler and J. King, Radford.—p. 407.
- Acute Head Injuries, with Particular Reference to Temperature, Pulse and Respiration Curves. B. Woodhall, Durham, N. C.—p. 413.
- Remarks on Eripal Anesthesia. C. P. Jones, Newport News.—p. 419.
- Sciatica. G. A. Duncan, Norfolk.—p. 420.
- Congenital Megacolon Treated by Diathermy: Case. A. S. Hurt Jr., Richmond.—p. 424.
- Use of Turnbuckles in Treatment of Fractures of Pelvis: Preliminary Study of Four Cases. R. D. Butterworth, Richmond.—p. 426.
- Overactivity as Potent Factor in Etiology of Some Nervous Diseases. A. Gordon, Philadelphia.—p. 427.

**Diagnosis of Pylorospasm and Ruptured Peptic Ulcer.**—Wolfe reports five cases of acute pylorospasm, four patients being women and one a man. All were suffering with intense agonizing pain in the epigastric region. Examinations showed tympany over the stomach, varying degrees of shock, fixed attitude and tremendous anxiety. The abdominal wall in each case was tense and the character of the pain might easily have been confused with that caused by ruptured peptic ulcer. Tenderness of the abdomen differed from that of ruptured peptic ulcer because of the fact that it was slightly more yielding to palpation and not as rigid and boardlike as that caused by the latter condition. Five minims (0.3 cc.) of a 1:1,000 solution of epinephrine was given hypodermically to every patient and this produced marked relief of the spasm in the women within five minutes. In the man three doses at intervals of five minutes were required before the spasm began to subside. Acute pain from peptic ulcer due to local reflex spasm in the muscle fibers underlying the ulcer might be relieved and perforation prevented by the hypodermic use of epinephrine. If these patients were suffering from perforations, epinephrine would have had no effect. The use of epinephrine was prompted by the author's appreciation of the similarity of the neurophysiology involved in spasm of the digestive tract and of that in bronchospasm. Its use involved no risk and would have caused no delay had these been cases of ruptured peptic ulcer.

## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## British Journal of Experimental Pathology, London

19: 171-238 (June) 1938

- Immunologic Behavior of Fractions of Serum Globulin. J. Marrack and Dora A. Duff.—p. 171.  
Transmission of Influenza Virus "W. S." to the Chinese Mink and the David's Squirrel. F. F. Tang.—p. 179.  
Enzymic Activity of Vaccinal Elementary Bodies. M. G. Macfarlane and M. H. Salaman.—p. 184.  
Further Studies on Combination of Vaccinia with Antivaccinal Serum: Action in Vitro of Neutralizing Antibody on Elementary Bodies. M. H. Salaman.—p. 192.  
Artificial Opsonization of Bacteria: Part III. J. Gordon and W. R. Alkin.—p. 204.  
Production of Staphylococcus  $\alpha$ -Hemolysin in Chemically Defined Medium. G. P. Gladstone.—p. 208.  
Influence of Transmitted Leukemia on Metabolism of Uninfiltrated Lymphoid Tissue. J. Victor and J. S. Potter.—p. 227.

## British Medical Journal, London

1: 1193-1248 (June 4) 1938

- The Changing Ground of Surgery. W. H. Ogilvie.—p. 1193.  
Composition of Blood in Pregnancy. J. Ramsay, V. T. Thierens and H. E. Mage.—p. 1199.  
Changes in Blood Pressure and Respiratory Volume Following Spinal Anesthetic. D. L. Lewis and E. G. M. Palser.—p. 1202.  
Brief Review of 426 Consecutive Cases of Urinary Calculus. H. P. Winsbury-White.—p. 1204.  
Bragg-Paul Pulsator in Treatment of Respiratory Paralysis: Report on Thirty-Four Cases. C. J. McSweeney.—p. 1206.  
\*Transfusion with Stored Blood. T. I. Wilson and J. M. M. Jamieson.—p. 1207.

**Transfusion with Stored Blood.**—Wilson and Jamieson give the details of fourteen instances (ten patients) of blood transfusion exemplifying the value of having a supply of blood in cold storage, ready for immediate use. The indications for transfusion were weakness and anemia associated with sepsis and malignant disease rather than the replacement of blood lost through hemorrhage, which was present in only three instances. Two deaths occurred in the period immediately following transfusion, one from syncope and the other from recurrence of hemorrhage. In three other cases the outcome was eventually fatal. None of these cases showed any reaction in the immediate post-transfusion period, and in no case could the fatal result be attributed to the administration of stored blood. Five of the patients—comprising eight transfusions—are alive after more than a year has elapsed. Among these are the two patients in whom reactions occurred. The procedure is a safe one.

## Guy's Hospital Reports, London

88: 129-256 (April) 1938 (Partial Index)

- Falling Incidence of Hour-Glass Stomach: I. Statistics from Guy's Hospital, New Lodge Clinic and Ruthin Castle. W. N. Mann.—p. 136.  
Id.: II. Statistics from the General Infirmary at Leeds. M. J. Stewart and C. Stewart.—p. 139.  
Epidemic Diarrhea and Vomiting and Sporadic Diarrhea. R. E. Smith.—p. 150.  
Sodium Evipan as an Aid to Psychotherapy. A. M. G. Campbell.—p. 185.  
\*Intradermal Skin Tests in Diabetes Mellitus. S. F. Seelig.—p. 210.  
Treatment of Asthma: Assessment of Results. E. R. Boland.—p. 218.  
Observations on the Fourth Electrocardiographic Lead, with Special Reference to Its Initial Ventricular and Auricular Portions. A. Schott.—p. 224.  
Heart Block Observed During a Period of Thirteen Years: Notes on Case. H. J. Starling.—p. 240.

**Intradermal Tests in Diabetes Mellitus.**—Seelig performed the intradermal test in fifty-one patients, of whom twenty were suffering from diabetes mellitus and thirty-one from diseases other than diabetes mellitus. On each flexor surface of the arms intradermal wheals were produced by an injection of 0.5 cc. of physiologic solution of sodium chloride and 0.5 cc. of a 0.1 per cent solution of dextrose, respectively. The time of disappearance of the wheals was compared. The results of the tests in the diabetic patients were uniform. In nineteen of the twenty cases the dextrose wheals disappeared more quickly than the ones caused by saline solution. If one assumes that the time of disappearance of an intradermal wheal containing a certain substance which is a constituent of the blood is indicative of the avidity of the skin for that substance, one may conclude that the skin of the diabetic patient has an

increased avidity for dextrose. In no case of a group of twenty subjects not suffering from diabetes mellitus did the "dextrose wheal" disappear either before or at the same rate as the saline one. There remains a third group of patients, who though not diabetic show results which are identical with the "diabetic" type of reactors. Two persons in this group were highly dehydrated, while the other nine were suffering from conditions which may have a bearing on the water and sugar metabolism.

## Irish Journal of Medical Science, Dublin

No. 149: 193-244 (May) 1938

- Surgery and Duodenal Ulcer. G. Wright.—p. 193.  
Fractures of Femoral Neck. A. Chance.—p. 210.  
Some Tests for Determining Efficiency of Hospital Sterilization Plants: Note. J. McGrath.—p. 218.  
Impressions of Accident Room in a General Hospital. E. M. Rees.—p. 225.

## Journal of Physiology, London

93: 1-74 (June 14) 1938

- Role of Leukocytes in Fat Absorption. E. H. Leach.—p. 1.  
Mechanism of Production and the Physiologic Significance of "Apneusis." G. Stella.—p. 10.  
Thermal Decomposition of Visual Purple. R. J. Lythgoe and J. P. Quilliam.—p. 24.  
After Effects of Tetanus on Mammalian Muscle. G. L. Brown and U. S. von Euler.—p. 39.  
Influence of Anterior Pituitary Extracts, Injected Either With or Without Insulin, on Glycogen Contained in Livers of Fasting Young Rabbits. H. P. Marks and F. G. Young.—p. 61.

## Lancet, London

1: 1201-1258 (May 28) 1938

- Biologic Thought and Chemical Thought: Plea for Unification. F. G. Hopkins.—p. 1201.  
Clinical Features of Central Pain. G. Riddoch.—p. 1205.  
\*Chemotherapy of Pneumococcal and Other Infections with 2-(*p*-Aminobenzenesulfonamido) Pyridine. L. E. H. Whitby.—p. 1210.  
Treatment of Acute Suppurative Otitis Media: Simplified Method Suitable for Unskilled Hands. A. Tumarkin.—p. 1212.  
\*Femoral Thrombosis. R. T. Payne.—p. 1214.

**Chemotherapy of Infections.**—Whitby finds that 2-(*p*-aminobenzenesulfonamido) pyridine possesses great chemotherapeutic activity against pneumococci of several types, more especially types I, VII and VIII, and also gives considerable protection against types II, III and V. Whereas most observers have found it easier to protect against type III than against type I, the reverse has been the case in the present series of experiments. The substance is not only highly protective against the Richards strain of hemolytic streptococcus in mice but is efficient in doses as low as from 1 to 2 mg. per gram of body weight of mice. The substance is active against meningococci. It appears to have a more polyvalent action than sulfanilamide, to be effective in low dosage and to have the great advantage, according to animal experiment, of being of low toxicity. There is evidence that it does not produce porphyrinuria. These experiments represent the one striking success in the chemotherapy of pneumococcal infections in an assessment of sixty-four related sulfanilamide compounds, some soluble, others insoluble.

**Femoral Thrombosis.**—Payne discusses a series of eighty-five cases of femoral thrombosis occurring in 1,300 cases of peripheral vascular or lymphatic disease. In all of these there was a definite cause, an acute onset and a varying period of disability. The thrombosis was associated with parturition or abortion in thirty-nine (with the postoperative state in seventeen), with typhoid in twelve and with infections of the lungs or pleura in seven. The remaining cases were associated with influenza, phlebitis, fracture, ulcerative colitis and erysipelas. The condition was bilateral in twenty-one cases, and in the unilateral cases the right side was involved in eighteen and the left in forty-six. In no patient in the entire series did the limb return entirely to normal. In two cases the evidence suggested a pure thrombosis, in sixty-one a pure lymphangitis and in twenty-two a combination of thrombosis and lymphangitis. Ulceration of the limb was present at some time or other in twenty-six of the eighty-five cases. These ulcers were chronic and intractable and associated with extensive inflammatory changes. Attacks of phlebitis occurred in nine cases, either in single attacks or in the form of recurrent attacks. It is estimated that some 5,000 cases of femoral thrombosis occur

annually in this country. The clinical evidence supports the view that lymphatic obstruction is responsible for the edema which is a characteristic feature of femoral thrombosis at all stages of the disease. From the experimental evidence, venous ligation will not produce edema. In patients dying as the result of a pulmonary embolus, the embolus is, as a rule, the first and final manifestation of a latent thrombosis, and but few of these patients have had the clinical manifestations of an antecedent "white leg." In cases of manifest femoral thrombosis a perivenous lymphangitis is the primary condition and this is followed by phlebitis and secondary thrombosis of the vessel. In these circumstances the thrombus is closely adherent to the wall of the vessel. In latent thrombosis that is without clinical manifestations the thrombosis is not associated with any perivenous change and the clot is but lightly adherent to the vessel. For this reason emboli are likely to occur.

1: 1259-1316 (June 4) 1938

- Causation and Treatment of Dermatitis. R. Hallam.—p. 1259.  
Use of Sulfanilamide in Treatment of Meningococcal Meningitis. E. C. O. Jewesbury.—p. 1262.  
\*Surgical Treatment of Pituitary Basophilism. A. R. D. Pattison and W. G. A. Swan.—p. 1265.  
\*Active Immunization Against Epidemic Influenza by Means of Elementary Body Suspensions Heated at 57 C. R. W. Fairbrother.—p. 1269.  
Reticuloocyte Response in Albino Rats After Injection of Gastric Juice. Gertrud Plaut.—p. 1272.

**Pituitary Basophilism.**—Pattison and Swan describe two cases of Cushing's syndrome in young women in whom improvement followed the insertion of radon seeds into the sella turcica. Both patients proved resistant to high voltage roentgen therapy and, in view of a progressive increase in blood pressure and the presence of gross osseous decalcification in the second patient, operation was considered to be justifiable. Although in the first patient no histologic confirmation of the pathologic condition is available there is no reason to doubt, on clinical grounds, that the case was a typical one of Cushing's syndrome. In the second patient the possibility of an adrenal tumor had been excluded by means of an exploratory laparotomy and the demonstration of the Crooke hyaline change. The relief from osseous pain that followed immediately after the implantation of radon seems to be analogous to that which may follow the removal of a parathyroid tumor in generalized osteitis fibrosa. The blood sugar curve showed a closer approximation to normal after operation than in the first patient, but the reduction of blood pressure and the hemoglobin percentage were approximately the same in the two patients. The implantation of radon has not provided a "cure" for the syndrome. On the other hand considerable improvement has followed the operation, and the menace of a progressively increasing blood pressure no longer exists. The disability resulting from osseous decalcification in the second patient has disappeared after the implantation of radon. The results following the use of 9 millicuries of radon in the second patient were not strikingly different to those following a dosage of 4 millicuries in the first patient, but the seeds in the first case were more favorably placed for influencing the activity of the pituitary, owing to the shape of the sella turcica. Although both patients are in a state of excellent subjective health their external configuration has been little altered. The general appearances are however much improved as a result of the disappearance of hirsutism of the face. In view of the doubtful part played by the basophil adenoma in Cushing's syndrome, it is the authors' opinion that treatment which aims at removing such a tumor is not rational.

**Immunization Against Influenza.**—Fairbrother finds that elementary body suspensions, heated at 57 C. for from thirty to forty-five minutes, constitute a useful immunizing agent against infection with the virus of influenza. The results obtained with mice and ferrets suggest that any differences given by the heated and living vaccines were due mainly to variations in the concentration of the virus in the suspensions. An appreciable antibody response was obtained by the inoculation of human volunteers and also a rabbit. These results suggest that heated elementary body suspensions should constitute an admirable immunizing agent for general application. Immunity following an attack of influenza is of only short duration. As there is no reason to suppose that artificially induced

immunity will be as great as that following infection, specific prophylaxis is not likely to be beneficial except under certain circumstances. It appears necessary either to give a series of injections during the late autumn—i. e., before influenza usually occurs—or to wait until an extensive epidemic is expected. Protection is to be expected only against epidemic influenza and not against the sporadic forms, many of which are vague infections of the upper part of the respiratory tract. In order to control the efficacy of the vaccines, serologic tests should be carried out before and after inoculation.

## Practitioner, London

140: 653-768 (June) 1938

- Diseases of the Liver. A. Hurst.—p. 653.  
Medical Aspects of Gallbladder Disease. A. E. Gow.—p. 665.  
Surgical Aspects of Gallbladder Disease. J. Walton.—p. 674.  
Malignant Disease of the Liver. F. Langmead.—p. 683.  
Jaundice in Adults. A. C. Hampton.—p. 691.  
Jaundice in Infants. R. E. Steen.—p. 705.  
Laboratory Tests in Diseases of the Liver and Gallbladder. J. D. Robertson.—p. 713.  
Diet in Health and Disease: XII. Diet in Disease of Liver and Biliary System. J. H. Anderson.—p. 721.  
Gastroscopy. G. C. Dockery.—p. 727.  
Action of Sulfanilamide on Brucella Abortus Infections. P. Manson-Bahr.—p. 740.  
Diagnosis of Tumors of Central Nervous System. J. M. Holmes.—p. 743.  
Rehabilitation. J. P. Steel.—p. 751.

## South African Medical Journal, Cape Town

12: 345-380 (May 28) 1938

- Ambulatory Treatment of Varicose Veins. R. Simons.—p. 347.  
Endemic Focus of Plague. L. Fourie.—p. 352.  
Cerebral Tumor: Case. I. Sacks.—p. 358.

## Chinese Medical Journal, Peiping

53: 513-632 (June) 1938

- Studies on Etiology of Typhus Fever in North China. H. L. Chung and J. H. M. Chang.—p. 513.  
Treatment of Old Posterior Dislocation of the Elbow. C. M. Meng.—p. 539.  
\*Vaccine Treatment of Diphtheria Carriers. H. Yu and A. E. Towers.—p. 553.  
Anaphylactic Reactions During Dick Test and Active Immunization with Scarlet Fever Toxoid. K. C. Wang.—p. 559.  
Guide to Identification of Anopheline Mosquitoes of the Colony of Hong Kong with Notes Concerning Them. R. B. Jackson.—p. 563.  
Provincial Health Administration of Yunnan: Brief Report of Its Activities Since Its Establishment July 1, 1936-Dec. 31, 1937. H. Y. Yao.—p. 577.

**Vaccine Treatment of Diphtheria Carriers.**—Since the harmful action on the cell of *Corynebacterium diphtheriae* depends on antibacterial immunity, it is theoretically logical to treat carriers or patients whose throats persistently harbor the diphtheria organism with diphtheria vaccine. Yü and Towers made throat swabs from 120 nurses and cultures of these were taken for *Corynebacterium diphtheriae*. Two of the nurses were found to be healthy carriers. Among the cases of clinical diphtheria, the throats of six continued to show positive organisms with delayed resolution of *Corynebacterium diphtheriae*. *Corynebacterium diphtheriae* isolated in these eight cases were all smooth. With the exception of a culture isolated from a healthy carrier which was avirulent, the remaining seven cultures were all virulent. Each of these six carriers received 5,000 units of antitoxin, were kept in the isolation ward and were found carrying *Corynebacterium diphtheriae* for a period of from one to four months. The diphtheria vaccine used in this experiment was prepared from a smooth virulent strain of *Corynebacterium diphtheriae*. The two healthy carriers and the six convalescents were subjected to vaccine treatment, commencing with 0.2 cc. of vaccine (approximately 100 million organisms) injected subcutaneously. The strength of each subsequent injection was doubled. The interval between injections was three days. Throat swabs were made after each injection and cultures taken for *Corynebacterium diphtheriae*. Two patients were cured after the fourth injection of vaccine, while the rest cleared up after the fifth injection. A bactericidal test was performed by taking blood from vaccine treated persons before giving vaccine and two weeks after the fifth injection. The results demonstrate that the bactericidal power toward *Corynebacterium diphtheriae* is increased by vaccine treatment.



## Archives des Maladies de l'Appareil Digestif, Paris

28: 433-552 (May) 1938

Volvulus of Stomach. P. Chène and M. Ramadout.—p. 433.

\*Diastatic Activity of Pancreatic Juice in Several Infectious Diseases. Garofeanu.—p. 468.

Vitamin B<sub>1</sub> in Diet and Question of Bread. H. Muller.—p. 475.

Chronic Pancreatitis of Atypical Evolution: Three Cases. J. Lorient.—p. 495.

**Pancreatic Juice in Infectious Diseases.**—Garofeanu points out that the older methods of examination of the diastatic activity of the pancreatic juice contained sources of error and that now only the direct method is regarded as suitable. This method consists in the examination of the fermentative activity of the enzymes in the duodenal juice, withdrawn following provoked secretion. This method discloses not only severe glandular changes but also the slight lesions of the gland which are likely to appear in diverse disorders. After citing the conditions in which this method has been employed by other investigators, the author says that he himself used the biologic examination of the duodenal fluid to determine the diastatic activity of the pancreatic juice in the course of infectious diseases. These researches were made on juice obtained after secretion had been provoked by ether and after preliminary evacuation of the bile following an intraduodenal injection of magnesium sulfate. The author cites the difficulties that are encountered in this method, particularly with the tubage and the introduction of ether. The latter provokes salivation, redness of the face, nausea, tachycardia and attacks of coughing. The author made his investigations on twelve patients with infectious diseases such as exanthematous typhus, typhoid, paratyphoid, scarlet fever, erysipelas, anthrax and influenza. To determine the fermentative activity of the lipase, he resorted to Bondi's method in the modification of Chiray and Milchevitch; for the evaluation of the diastatic activity of the trypsin he used the method of Goiffon and Nepveux. The results obtained with the latter method are recorded in two tables; the first one reveals the diastatic activity during fever and the second one during convalescence. The enzymatic activity showed a reduction, at least in certain cases, and the quantity of the duodenal juice was always diminished. The activity of the lipase was reduced in six of twelve cases; this reduction was most noticeable in two cases of exanthematous typhus and in one case of erysipelas. As regards the activity of the trypsin, it was diminished in five of twelve cases, the diminution being greatest in two cases of exanthematous typhus and in one case of paratyphoid A. Thus the reduction in the diastatic activity concerns the lipase or the trypsin or both. It is sometimes caused by the febrile state but in the majority of cases is due to an impairment of the gland.

## Presse Médicale, Paris

46: 953-968 (June 18) 1938

Tuberculosis and Functionaries of the State. G. Poix.—p. 953.

\*Intradermic Injections of Blood in Case of Rheumatic Pains. J. Le Calvé.—p. 956.

Are There Dangerous Universal Donors? P. Moureau, E. Balgaïries and L. Christiaens.—p. 958.

Gonococcus and Chemotherapy. P. Barbellion and A. Garibaldi.—p. 960.

**Injections of Blood in Rheumatic Pains.**—Autohemotherapy, Le Calvé states, elicits a mild shock, which is well tolerated, increases the immunity, stimulates the reticulo-endothelial system and desensitizes the organism against certain anaphylactic conditions. These factors make it logical to employ this treatment in rheumatic conditions, which are mostly allergic manifestations. Moreover, in rheumatism of Bouillaud's type, in which the author found that treatment with a sulfurated oil and sodium salicylate produces a more rapid improvement than did medication with salicylate alone, he observed also that he could obtain the same results by autohemotherapy together with several injections of the sulfurated preparation. In this connection the author cites the histories of two boys, aged 13 and 14 years, who had acute articular rheumatism. The first attack confined them to bed for twenty-five days and six weeks, respectively. Both presented the symptoms of endocarditis. During a second attack, a year later, two applications of autohemotherapy cured one in nine days, the other in six days.

Another argument in favor of autohemotherapy is that it often exerts a calming influence on the pains. This action is especially noticeable when the reinjection of the blood is made into the painful zone. Still another consideration is that the albumins of the blood, extravasated in the tissues, are there subjected to the attack of proteolytic ferments. Digested and disintegrated, they are transformed into peptides, then into amino acids and in aminated bases with a predominating hypotensive action. Moreover, autohemotherapy provokes vasodilatation, a slight acceleration of the pulse and a reduction in the tension, and it exerts an influence on the nerves. It appears that the action of autohemotherapy, particularly its analgesic effects, are due to the liberation of histamine or of a related body. The disintegration of the injected blood does not take place suddenly but gradually, and the therapeutic action is thus prolonged. The author says that the number of intradermal injections varies: one or two injections, at a distance, of 2 or 3 cc. may be made at the painful points and several others around the area. At the same session, several regions may be treated. The rest of the blood can be injected into the buttock. The author cites the clinical histories of some of the cases in which he resorted to hemotherapy. In forty-two cases he found that the combination of autohemotherapy with injections of sulfurated oil produced better results than did the injection of the sulfurated oil alone, but he also obtained several cures by employing hemotherapy alone.

## Revue de Chirurgie, Paris

57: 251-320 (April) 1938

Clinical Aspects and Pathogenesis of Ludwig's Angina. M.-B. Fabricant.—p. 251.

\*Osteomyelitis with Pneumobacillus of Friedländer. Talbot and Parlange.—p. 271.

Glycemic Curves and Surgical Interventions. L. Bugnard, F. H. Columbies and A. Costes.—p. 290.

Section of Splanchnic in Certain Chronic Painful Syndromes of the Abdomen. R. Leriche and R. Fontaine.—p. 302.

Spina Ventosa Treated and Cured by Colloidal Bacillary Extract of Grimberg. R. Bloch.—p. 305.

Venous Spasm of Arms After Intra-Arterial Injection: Action of Infiltration of Stellate Ganglion; Phlebographic Control Before and After Infiltration. J. C. Dos Santos.—p. 308.

**Osteomyelitis with Friedländer Bacillus.**—Talbot and Parlange say that the pneumobacillus which was described by Friedländer in 1882 has for a long time been confused with the pneumococcus. This confusion can be explained by the presence of a capsule in both of them and by the fact that either may be present in pathologic processes of the lung. The septicemia with the pneumobacillus is encountered most frequently in the adult. It does not always exhibit the same clinical aspects, but most often it appears in the form of a pure septicemia without local manifestations. In other cases this septicemia is chiefly localized; it may be pulmonary or meningeal or it may become manifest in the form of a hepatocholecystitis, adrenalitis or aortitis. Moreover, the pneumobacillus has been known to cause septicopyemia. The authors observed a case of septicopyemia with the pneumobacillus of Friedländer, which was of otitic origin, with sinojugal thrombophlebitis and multiple localizations, one of which was an osteomyelitis. Osteomyelitis with Friedländer's bacillus is a rare disorder and is always grave. It is of an extremely tenacious character in that it reappears after apparent cure. The authors differentiate four anatomicopathologic forms of the osteitis caused by the Friedländer bacillus: (1) a periosteal form with abscess, (2) a form in which under the periosteal abscess an osteomyelitis was discovered, (3) a massive osteomyelitis and (4) a form of dry diaphyseal caries. To the question whether the osseous processes caused by the Friedländer bacillus present characteristic symptoms that would facilitate the diagnosis and treatment, they give a negative reply. However, the torpid evolution should call attention to this type of process. The authors show that it is impossible to give general directions about the local treatment because practically all measures have been known to produce cure in one case and have been followed by death in others. The various types of shock therapy, they state, have so far been without appreciable results. Acriflavine hydrochloride has been used successfully by some investigators in septicemias with the pneumobacillus; moreover, some derivatives

of sulfanilamide have proved successful against some capsulated organisms. They themselves observed a rapid effect in the treatment with mandelic acid. They think that in the future chemotherapy will be of great importance in the treatment of pneumobacillary processes.

### Helvetica Medica Acta, Basel

5: 299-408 (June) 1938

- \*Disease of Swineherds. F. Georgi, H. Pache and E. Urech.—p. 299.  
Shock Therapy: Its Action on Proteic Equilibrium of Serum. G. Piotrowski.—p. 317.  
Pharmacology of Lipoids, Lecithin, Cephalin, Cholesterol. F. Rothschild.—p. 329.  
Experimental Metallic Osteodystrophies: Hepatorenal Elimination of Metals. M. Queloz.—p. 347.  
Lutein Tissue and Bisexual Hormone. E. Fels and L. M. Diaz.—p. 366.

**Disease of Swineherds.**—Georgi and his associates point out that one of them described the first case of the "maladie des jeunes porchers" (disease of young swineherds) in 1931 and that since then the reports about this type of disease have multiplied. During the first eighteen months following the discovery of this disease they never had an opportunity to treat a relapse, and they were of the opinion that the first attack of the disease conferred an immunity. Recent observations, however, caused them to change their view. They cite six cases of the disease of swineherds in which relapses or recurrences developed. All the patients were cured without sequels, but in several cases the disorder was so grave that the differential diagnosis had to consider the possibility of meningitis, beginning septicemia, Brucella abortus infection or typhoid. The anamnesis, which directed attention to the occupational type of disease, had an important part in determining the correct diagnosis. Discussing the transmission of the disease, the authors say that they never observed contagion from man to man. All the persons who developed the disease were people coming in contact with hogs. In taking up the terminology of the disease the authors suggest that it be referred to simply as disease of swineherds rather than of "young" swineherds. Knowing the benign character of the disease of swineherds, they decided to use it as a substitute for malaria in fever therapy in the treatment of schizophrenia. In the course of these inoculations it was found that, just as in the animal experiments, the first inoculation produced fever but the subsequent ones did not. From these observations the authors conclude that the experimental inoculation confers immunity, of what duration is as yet unknown. After the spontaneous disease, however, the immunity is not always complete and lasting. In the concluding summary the authors say that the disease of swineherds is caused by a filtrable virus which is transmissible to man and animals. In man the period of incubation varies between six and thirteen days.

### Haematologica Archivio, Pavia

19: 263-352 (No. 4) 1938

- \*Participation of Hemolymphopoietic System in Psoriasis. G. B. Cottini.—p. 263.  
Hemorrhagic Aleukia with Reticulo-Endothelial Reaction. D. M. Bernardo.—p. 311.  
Rouleau Formation of Erythrocytes Explained by New Theory of Structure of Blood. G. Triolo.—p. 335.  
Analogies and Differences Between Acute Leukemia and Acute Erythremia. G. Di Guglielmo.—p. 341.

**Hemolymphopoietic System in Psoriasis.**—Cottini studied nineteen patients with psoriasis by a histopathologic study of lymph nodes removed by biopsy. The superficial lymph nodes are enlarged, hardened, painless and mobile. The enlargement parallels early evolution of the disease and stops as the latter enters the period of chronicity. Periadentitis is not present. Lymph nodes of the inguinal and axillary regions are the most frequently involved. The most interesting facts are the presence of eosinophilia, proliferation of the reticulo-endothelial cells of the lymph nodes and the presence of large deposits of pigments in the adenoid tissue. Eosinophilia is acute in the sternal bone marrow, taken by puncture, and moderate in the peripheral blood and the skin and lymph nodes. It is due to an allergic reaction of the sternal bone marrow to disintegrated cells. The reticulo-endothelial cells at the lymph nodes have a characteristic distribution and phagocytic properties. Tissues of the medullary

portion are almost replaced by fibroblasts, especially near the hilus. The cortical portion is almost normal. It is the seat of a large number of phagocytes which contain melanin. The changes of the lymph nodes are acute in patients who have had the disease for a long time. The author feels that the metabolism of the skin and the interchanges between the skin and the epidermis are disturbed in the course of psoriasis. The disorder results in an increased passage of pigments to the lymph nodes. The latter react with proliferation of reticulo-endothelial cells with increased properties of fixation of the pigments.

### Hospital, Rio de Janeiro

13: 957-1169 (June) 1938. Partial Index

- \*Appendicitis and Biliary Stasis. A. Brandão Filho and J. Vilela Pedras.—p. 979.  
Autonephrectomy or Exclusion of Kidney in Pyonephrotic Calculosis. Guerreiro de Faria and A. Filho.—p. 989.  
Cephaloplegic Syndrome of Fernandes Figueira, M. Vaz de Melo.—p. 1015.  
Brown-Séquard Syndrome. F. de Oliveira Bastos.—p. 1019.  
Antiamarillic Vaccine: Practical Advice. C. de Almeida.—p. 1061.  
Cervicothoracic Sympathectomy in Paroxysmal Respiratory Syndromes. M. C. de Mota Maia.—p. 1077.

**Appendicitis and Biliary Stasis.**—Brandão Filho and Vilela Pedras say that many patients who had an appendectomy for chronic appendicitis report a continuation of the gastric disorders. The microscopic study of the removed appendixes confirms the indications of appendectomy. According to the authors, biliary stasis, which frequently coexists with chronic appendicitis, is the cause of the continuation of the gastric disorders after appendectomy. It is advisable to make an early diagnosis and treat the condition. Treatment consists in biliary drainage by Meltzer-Lyon's therapeutic test and administration of substances which stimulate the motor function of the gallbladder. The number of duodenal intubations varies from six to twelve. It is ruled by disappearance of the biliary stasis, which is verified by repeated roentgen examination of the gallbladder. The results of the treatment depend especially on early administration. If it fails, a surgical intervention on the gallbladder is indicated. Three cases are reported.

### Archiv für orthopädische Chirurgie, Berlin

38: 579-748 (June 17) 1938. Partial Index

- Conservative-Surgical Therapeutic Methods After Injury of Spleen. H. Galm.—p. 579.  
Deformities of Spinous Processes. F. J. Irsigler.—p. 593.  
\*Surgical Treatment of Habitual Dislocation of Shoulder. R. Heep.—p. 615.  
Chronic Arthritis and Mechanism of Wrist Joint. H. Virchow.—p. 634.  
Dislocation of Semilunar Bone in Volar Direction and not Perilunar Dislocation of Hand in Dorsal Direction. A. Perschl.—p. 657.  
Aspects of So-Called Symbrachydactylia. W. Eckinger.—p. 662.  
Pathogenesis of Joint Mice in Talocrural Joint. H. Puhl and K. Lindemann.—p. 726.

**Surgical Treatment of Habitual Dislocation of Shoulder.**—Heep reviews the various surgical methods that have been recommended for the treatment of the habitual dislocation of the shoulder joint. He says that the operations on the muscles have been largely abandoned because they do not produce the desired results, and the simple ruffing of the capsule has likewise been discontinued because there are frequent relapses. Even the normal capsule is rather wide at the shoulder joint, so that it does not have the essential part in the habitual dislocation. The preferred therapeutic methods today are the interventions on the bone, and of these the extra-articular ones seem to be the best. At the author's clinic, Eden's operation is employed. This operation consists in the transplantation of a piece of the tibia into the anterior border of the glenoid cavity. The piece of bone must extend at least 1 cm. beyond the anterior border of the glenoid cavity. It must be covered with periosteum and must be fixed on the lower border of the glenoid cavity. This is accomplished either by means of periosteal sutures or by fixing the piece of bone to the neck of the scapula by means of a bone screw. Follow-up examinations one, two, three and five years after the intervention revealed that the results obtained with Eden's operation are quite satisfactory. The advantage of the operation is that it is an extra-articular intervention which makes the opening of the joint unnecessary. A disadvantage of the operation is that the approach to the

anterior portion of the glenoid cavity is rather difficult, particularly in obese persons. Moreover, the fixation is not easy. However, an experienced and competent surgeon will readily overcome these technical difficulties. The author reviews the clinical histories of six patients in whom this operation was performed. The last of the cases demonstrates that exactness is essential, for if the transplanted piece of bone does not extend beyond the anterior glenoid border the operation is a failure, because the piece does not act as a barricade.

### Beiträge zur Klinik der Tuberkulose, Berlin

91: 569-650 (June 20) 1938

- \*Relation of Erythema Nodosum to Tuberculosis in Adults. E. Zweifel.—p. 569.  
Action of Oxygen on Resorption of Pneumothorax Gases. G. Perschmann and F. Momsen.—p. 585.  
Tuberculosis of Spleen During Senility. A. Arnstein.—p. 592.  
Treatment of Large Cavities. K. Bönsdorff.—p. 605.  
Experimental Contributions to Gold Therapy of Tuberculosis. S. J. Leitner.—p. 626.

#### Erythema Nodosum and Tuberculosis in Adults.—

Following a review of the literature on the relation between erythema nodosum and tuberculosis, Zweifel reports his own observations in fifty-six cases of erythema nodosum which were observed at the medical policlinic of the University of Zurich during the years 1931-1936. The ages of the patients varied between 13 and 49, but the majority of the patients were about 20; forty-eight were females and eight were males. After citing some of the symptoms, such as the initial fever, the first appearance of the erythema on the anterior surface of the lower part of the leg or on the forearms and the painfulness of the nodules only on pressure, the author discusses, among other factors, the outcome of the tuberculin reaction, the concurrence of erythema nodosum with disorders of other organs and the results of the roentgenoscopy. In summarizing his observations, he says that of the forty-three adults in whom a roentgenogram was made twenty-two (51 per cent) presented tuberculous processes. These were nearly always of the type designated as "secondary infiltrations." In ten other cases (23 per cent) the changes were slight or questionable. In the other eleven cases (26 per cent) roentgenoscopy gave negative results. However, the author thinks that in the last two groups there may be cases in which the roentgenoscopy was made either too early or too late. If six additional cases (described by another author) and the case of a child are counted in, the percentage of the simultaneous occurrence of erythema nodosum with florid tuberculous pulmonary changes in the roentgenogram amounts to 56. In three cases relapses of erythema nodosum were observed. In ten cases articular involvement was observed, which in the presence of the roentgenologic aspects of the lungs was regarded as "Poncet-rheumatism" in the presence of erythema nodosum. The author states further that twenty-six positive tuberculin reactions were observed in thirty-three patients with erythema nodosum. It is noteworthy that in six of the seven patients with erythema nodosum who reacted negatively to the tuberculin test the roentgenogram indicated a tuberculous origin.

### Münchener medizinische Wochenschrift, Munich

85: 897-936 (June 17) 1938. Partial Index

- Prevention of Infection in Parenterally Administered Medicaments. F. Konrich.—p. 897.  
\*Tests According to Gudzent's Method in Rheumatism and Gout. E. Tancre.—p. 899.  
Observations on Patients with Epidemic Encephalitis. H. Weil.—p. 901.  
Therapy of Mastitis. W. Lüttge.—p. 906.  
Is Vaccination Against Smallpox Still Necessary? H. Krauss.—p. 907.  
\*Pheochromocytoma of Adrenals: Concurrence with Neurofibromatosis. F. Brenner, H. Konzett and F. Nagl.—p. 914.

**Gudzent's Test in Rheumatism and Gout.**—Tancre admits that Gudzent's test method for rheumatism has been criticized by some investigators because many patients without rheumatism give positive reactions, whereas some with rheumatism give negative reactions. Moreover, some clinicians are of the opinion that rheumatism has no connection with allergy but is the result of infection. The author thinks that both theories, that of the exclusive allergic origin as well as that of the exclusive infectious origin, are too narrow. He emphasizes that the clinical aspects of rheumatism show such a great variety that a

narrow etiologic interpretation is not justified. On the basis of his practical experiences he is convinced that the assumption of an allergic etiology of rheumatism is of great value. A large number of disorders, among them rheumatism, may result from an allergic condition. To be sure, it cannot be expected that in each rheumatic patient a positive reaction will result from Gudzent's allergic tests. However, in about 30 per cent of the patients with rheumatism, positive reactions are obtained which make it possible to identify the harmful factor. The exclusion of this factor may effect cure or improvement. The author does not deny that infections and exposure to cold may be causal factors in the development of rheumatism. In this connection he points out that tests on rheumatic miners yielded hardly any positive allergic reactions and he thinks that in these miners the rapid changes in temperature to which they were exposed may have been a causal factor in the rheumatism. The author employed the so-called allergenins of Gudzent in seventy patients with rheumatism and gout. The tests include those with meat, cereals, fish, milk, eggs, vegetables, bacteria, mold and control solution. The author gives brief clinical histories of several patients in whom positive reactions were obtained and in whom the exclusion of the offensive substances was followed by cure or improvement. He was able to prove that Gudzent's allergenins produce strictly specific reactions. Some of the patients gave positive reactions to one or two tests and negative reactions to all others. He emphasizes once more that in allergic tests on rheumatic and gouty patients, just as in the other so-called allergic disorders, positive results can be expected only in a certain percentage of the patients.

**Pheochromocytoma of Adrenals.**—Brenner and his associates consider the report of one case of chromaffin tumor of the adrenals justified because this case differs in several respects from those reported in the literature. The patient, a woman, did not present the symptoms that are characteristic for this type of disorder, and the multiplicity of symptoms made a diagnosis difficult. The condition of the urine, the hypertension and the changes in the fundus oculi suggested an acute nephritis. However, there were also several aspects which could not be explained on the basis of a renal disorder, and some symptoms of renal disease were lacking. Periarteritis nodosa was another disorder that was taken into consideration. The necropsy disclosed, besides other pathologic changes, a pheochromocytoma originating in the medullary cells of the left adrenal. The tumor weighed 300 Gm. What makes this case especially interesting is the concurrence of a chromaffin tumor of the adrenal with a neurofibromatosis. In this connection the author points out that the simultaneous occurrence of these two conditions has been reported repeatedly. Among the sixty-four cases of chromaffin tumors of the adrenals hitherto reported, there were eight in which neurofibromatosis existed simultaneously. This concurrence of the two disorders has been regarded as the manifestation of a systemic disease of the nervous system in which brain, spinal cord and peripheral nerves as well as the sympathetic and its derivatives may be involved. The authors also determined the epinephrine content of the tumor and found it exceptionally high. They think that this explains the high blood pressure and the tachycardia which were observed in the woman.

### Polska Gazeta Lekarska, Lwów

17: 561-584 (July 3) 1938

- Secondary Thrombopenia. A. Rytel and M. Dzienawowski.—p. 561.  
Spontaneous Rupture of Ovarian Cyst: Case. J. Jenczowski.—p. 563.  
\*Therapy of Myoma of Uterus by Radium. M. Seidler.—p. 565.  
Intracranial Complications of Otitis Media. W. Jankowski.—p. 568.  
New Methods of Therapy of Infections. N. Dab.—p. 573.

**Radium Therapy of Myoma of Uterus.**—Seidler reports thirty-nine cases of myoma of the uterus observed during the last four years in which radium treatment was administered. He used radium in cases in which surgical intervention was contraindicated either because of severe anemia or because of hemorrhage. Hemorrhages were immediately stopped by application of radium. In one case the myoma was as large as a hen's egg, with severe hemorrhage, but after the administration of 3,600 mg. hours the hemorrhage was stopped. Myoma occurred in twenty-nine multiparas and ten primiparas. He separated them according to age in three groups: In group 1

there were three patients ranging in age from 20 to 30 years, in group 2 there were twenty-five patients from 30 to 40 and in group 3 there were eleven patients over the age of 40. The dosage was from 930 to 5,000 mg. hours, according to the age and size of the tumor. The mortality rate after operation is from 2 to 5 per cent and after radium therapy about 0.2 per cent. The genital organs of the patient are saved and the hormone action reappears after a few months.

### Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

S2: 3059-3190 (June 18) 1938. Partial Index

Calcification of Foci in Lung in Course of Pulmonary Tuberculosis. J. H. Reichart.—p. 3065.

\*So-Called Aleukemic Megakaryocytic Myelosis. G. A. Lindeboom.—p. 3072.

Use of Metals in Surgery. A. H. Smook.—p. 3080.

Fatality Following Treatment with Insulin Shock According to Sakel: Method. A. P. Timmer.—p. 3088.

**Aleukemic Megakaryocytic Myelosis.**—Lindeboom points out that in the group of aleukemic leukemias a form has been recognized in which the pathologic anatomic examination of the spleen and liver disclosed giant cells. These giant cells have been considered to be megakaryocytes and the disorder has been designated as aleukemic megakaryocytic myelosis. In recent years it has been suggested that this disorder presents an independent disease entity. It develops mostly in middle-aged persons, more often in women than in men. It is a chronic disease which develops insidiously. The enlargement of the spleen, which is usually considerable, dominates the clinical picture but its discovery is usually accidental. Fatigue, enlargement of and a sensation of heaviness in the abdomen and piercing pains in the region of the spleen are the chief complaints. The enlargement of the liver is usually much less noticeable than that of the spleen. The lymph nodes are not swollen. The temperature may be subfebrile. The examination of the blood usually reveals a mild to moderate orthochromic or hypochromic anemia, which during the later stages may become more severe. The resistance of the erythrocytes is often somewhat reduced. The number of leukocytes may be entirely normal or they may be slightly reduced or greatly increased. In nearly all cases a more or less severe myeloid reaction is noticeable. The considerable polychromasia and the anisocytosis and poikilocytosis are surprising in view of the moderate anemia. The author reports the clinical histories of two patients who had this disorder. Discussing the placement in the nosologic system, the author doubts that the disorder can be classified with the leukemias and suggests that it stands between the leukemias and the pure endothelioses and is a hepatolienal hematopoietic endotheliosis. Regarding the treatment, he says that the effect of roentgenotherapy is usually slight. In one of the reported cases it was followed by a temporary improvement. The splenectomy caused no improvement, for the condition of the patient was less good than it had been before the operation. However, the French literature reports some successes with this treatment and recommends the early removal of the spleen.

### Acta Medica Scandinavica, Stockholm

95: 539-606 (June 11) 1938

Exophthalmos in Exophthalmic Goiter. L. Polak Daniels.—p. 539.

\*Icteric Form of Glandular Fever. S. I. de Vries.—p. 552.

Normal Values for Erythrocytes and Cell Volume Percentage and the Effect of Living Therefrom in Children Aged from 8 to 14. P. Fergeman.—p. 566.

Bacterium Alkaliescence in Infections of Urinary Tract and Its Relation to Dysentery Bacilli. E. Neter.—p. 597.

**Icteric Form of Glandular Fever.**—De Vries does not consider glandular fever to be a rare disease nor does he think that the cases corresponding to Pfeiffer's original description are the most common. Careful clinical studies have disclosed widely different types which have certain distinct characteristics in addition to the main symptoms of the disease: fever, general adenopathy and lymphomononucleosis. Atypical forms of glandular fever were first recognized by Glanzmann and Tidy. The three aforementioned characteristic symptoms are not necessarily present in the atypical cases. Fever and adenopathy have been known to be absent or to be present in only a mild degree. Although some authorities hesitate to recognize glandular fever

in such a form, the author believes that, although rarely, the disease does occur in such a form. The diagnosis is dependent on two essential factors: (1) the typical morphologic blood picture and (2) the positive antibody test of Paul and Bunnell. Following a discussion of these hematologic and serologic aspects, the author reports the clinical histories of three cases which illustrate the value of the hematologic and serologic examinations, since the clinical signs alone would have suggested the diagnosis "jaundice." Neither fever nor adenopathy was sufficiently prominent to seem of value for the diagnosis. The author says that in the future in every case of jaundice a blood count and the antibody test of Paul and Bunnell should be made. In true infectious jaundice, as opposed to infectious mononucleosis, a leukopenia with lymphocytosis and deviation toward the left without atypical cell types, without pathologic changes in the lymphocytes and with a negative Paul and Bunnell reaction will be found.

### Acta Obstet. et Gynec. Scandinavica, Stockholm

18: 125-244 (No. 2) 1938. Partial Index

Progesterin Content in Mature and Young Human Placentas. J. Haffner.—p. 125.

\*Pregnancy Complicated with Diabetes. E. Brandstrup and H. Okkels.—p. 136.

Way to Achieve Painless Confinements. P. Wetterdal.—p. 174.

Relief of Pains in Childbirth: Reports from Studies in the United States, England and Germany. September 1936 to April 1937. Margit Insulander.—p. 179.

Some Observations on Blood Vessels of Uterus Under Normal Conditions and in Myoma. B. Holmgren.—p. 192.

Course of Pregnancy, Delivery and Puerperium in Primiparas with Excess Weight. E. Möller-Christensen.—p. 222.

External Endometriosis and Sterility. A. Turunen.—p. 237.

**Pregnancy Complicated with Diabetes.**—Brandstrup and Okkels point out that the literature on diabetes and pregnancy from the preinsulin days gives a gloomy outlook for the mother as well as for the child. There was a maternal mortality of 30 per cent in direct connection with pregnancy or parturition, and not more than 50 per cent of these patients were alive as long as two and a half years after the parturition. As to the children, the outcome was even worse, as abortion, intra-uterine death of the fetus and death of the child during delivery or within the first days of life occurred so frequently that the total death rate for the fetus exceeded 60 per cent. The discovery of insulin has brought about a complete revolution. Young women with diabetes do not die of diabetes, and they conceive far more frequently than before. While it is possible with modern therapy to make the female diabetic patient free from symptoms, enabling her to work and to conceive, it is not always practicable to bring her safely through pregnancy and parturition. The material here presented comprises twenty-two instances of pregnancy in nineteen diabetic patients observed in the Lying-in Department A, Rigshospital, Copenhagen. This material is not suggestive of any change in the diabetic condition of the mothers during pregnancy. The restitution of these patients after the puerperium indicates that such changes as have been observed during pregnancy (frequency of acidosis and changes in the insulin requirement) are attributable to factors of a nature that does not directly concern the diabetic condition. The obstetric risk is somewhat increased through a tendency to hydramnios, excessive size of the child and, especially, infection in the presence of eczema of the vulva. In the twenty-two cases observed, only ten living children were discharged from the hospital. The great mortality among children of diabetic patients may probably be attributed to maternal hyperglycemia and acidosis. In three of the dead children the necropsy was extended to include a thorough microscopic examination of the endocrine organs. The pathologic changes observed in the pancreas, hypophysis and thyroid are described. Commenting on these changes, the authors say that the maternal hyperglycemia alone brings about the pathologic changes in the child. In the discussion of the therapeutic problems, it is pointed out that in the future the main task of the treatment should be to employ such dietetic and medicinal measures as to make obstetric operations unnecessary. The pregnant diabetic patient must be watched closely, and the efforts must be aimed at the avoidance of hyperglycemia and acidosis. The therapeutic significance of protamine zinc insulin is emphasized.

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## SOME NEUROLOGIC ASPECTS OF PSYCHIATRY

CHAIRMAN'S ADDRESS

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LOS ANGELES

Psychiatry, as a department of medical science, has been having a hard time keeping pace with the other departments of medicine, and it is commonly accused of being unscientific, of being a philosophy rather than a science. With the present day progress in psychiatric research, this indictment is no longer a true one, and the science of psychiatry bids fair to assume a leading position by its contributions to the welfare of the human race.

Modern psychiatry, the science of human behavior, has been built as a superstructure on the foundation of psychology, neurology and biology. Until recently neurology and biology have contributed comparatively little, and psychology has taken the leading role as a basis for psychiatric observations and analyses. In the past half century since Bastian wrote "The Brain as an Organ of Mind," neurology and biology have made notable advances and have furnished data by means of which it is possible to find more and more correlations of structure and function as regards the brain, and a better appreciation of the physical basis of human behavior.

The superstructure of psychiatry is far from being completed and there is no prospect that it ever will be, but more advancements are being made today than ever before. Many research workers are constantly contributing new material in the basic sciences, others are consolidating the material and fitting it into the foundation, while still others are improving the general architecture of the superstructure and harmonizing its different departments that each may be more useful to the others. Today more than ever before psychology, psychiatry and neurology are interlaced and interdependent, and workers in each of these special fields are not only adopting material from the others but are contributing valuable material to the others.

From the time when the human race was endowed with intelligence sufficient for introspection and came to realize that man was born to die, philosophers have struggled with conceptions of the soul and the body and of the relationship of mind to matter. Only during the past century has the conception developed that the mind is not something apart and independent of the body, but today it is generally conceded that, in the last analysis,

all thought and all behavior are the results of physical and chemical reactions in living tissues. It is with this point of view that neurology seeks to find correlations of structure and function with regard to mental processes as well as in the sensory and motor phenomena, in which so much success has been attained.

Neurology deals primarily with the correlations of structure and function, utilizing all available evidence from biology and the contributory sciences. It has largely ignored the analysis of personality and has preferred to study physical phenomena, thus exposing itself to the charge of being "materialistic." It is my purpose in this discussion to review briefly some of the concepts of neurology with regard to the problems of psychiatry, although such concepts are admittedly in part theoretic and hypothetic.

Among the contributions of biology, the theory of neurobiotaxis developed by Kappers deserves consideration here in view of its apparent applicability in explanation of the development and functioning of the nervous system. According to this theory activity in living cells causes electrical polarization, and in nerve cells this is an important factor in the formation of the cell processes. The axon develops from the positively charged part of the cell, a nodal point, and the dendrites from the negative surface, which is undifferentiated. The processes continue to extend until synapses are established, the axon growing in the direction of the predominating action currents and the dendrites toward the source of action currents which reach the cell from outside. This process is not only active during the period of embryonic development but continues throughout life and is apparently an important factor in the formation of synapses and in the building up of "engrams." If this theory is valid it goes far to explain on a physiologic basis the processes of memory and learning, the formation of habits of thought and action, and the mechanism of conditioned reflexes and of mental activities in general. It also contributes evidence in support of the theory of inheritance of acquired characters in the evolutionary sense so far as the anatomic arrangement of cell groups and fiber tracts of the nervous system seem to have shifted in the course of evolution in conformity to this theory and have become established by heredity. Kappers states: "This fundamental law of neurobiotaxis not only shows that the well known law of association in psychology is a neurobiotaetic law, but it also indicates how wonderfully polarized is the whole process of tract formation, and how well this process fits into the class of bioelectric phenomena" and "This law has long since been acknowledged to be one of the major laws governing the development of our mental capacities, that is, the law of mental association."

Read before the Section on Nervous and Mental Diseases at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 15, 1938.



The theory of neurobiotaxis has been utilized in the development of the following concepts as a supplement to the well known principles of neurophysiology and cerebral localization.

#### CONSCIOUSNESS

The neurologic concept of consciousness is that it is a state of activity of the entire nervous system, and in particular of the brain, which varies quantitatively from the maximum degree of mental action to complete inactivity, as in coma or general surgical anesthesia. Although all parts of the brain may contribute to the mental processes during consciousness, mental activity of all kinds appears to depend on the normal functioning of groups of neurons in the primitive diencephalon. The normal cycles of sleeping and waking are evidences of the physiologic activity of this mechanism. As it would appear that energy liberated in the diencephalon is essential for the activation of all the rest of the nervous system so far as psychologic phenomena are concerned, it may be postulated that the "center" of consciousness is located in this region, and much clinical and experimental evidence supports this view. It is surely not accidental that other primitive functions of the nervous system related to the vegetative processes, instincts and emotions have been found to be dependent on structures in the basal region of the brain in close proximity to those postulated as the center of consciousness. The application of this concept of consciousness to psychiatry seems obvious, since quantitative variations of consciousness are manifested in disturbances of behavior in terms of intelligence, emotions and instinctive action.

#### INSTINCTS, EMOTION AND INTELLIGENCE

There has been much discussion with regard to the nature and classification of instincts, but it is generally agreed that they represent innate biologic patterns of behavior characteristic for each animal species and from which are derived the motivations of all psychologic activity. Instinctive reaction patterns of behavior tend to promote the development and welfare of the individual, the reproduction of the species and the mutual benefits derived from adjustments within the social group.

In view of the accepted structure and function relationship it must be assumed that instinctive dispositions are represented anatomically by inherited neural patterns of inconceivable complexity and are probably located in the diencephalon in proximity to centers which are concerned with the regulation of vegetative functions, emotional reactions and consciousness. We can postulate, although we cannot demonstrate, differences in the neuron patterns of the diencephalon to account for the differences in the instinctive behavior of dogs and cats; and the same conception may be applied in explanation of the different inherent human personality traits.

Emotion and affectivity are essentially components of instinctive action. In each instinctive attitude is included a characteristic emotional or affective element, and this implies that each of the neuron groups representing the different instinctive attitudes is closely connected with the neuron group representing a particular type of emotional reaction. In personality analysis, emotional expressions are most valuable clues by which to detect instinctive motivations. Dissociation of the normal relationship of instinctive motives and their appropriate emotional expressions are common in men-

tal disease and are strongly suggestive of derangements of neural patterns in the diencephalon.

Intelligence has been variously defined but in its broadest application implies the capacity to learn and profit by experience; to make observations, to remember, classify, analyze and synthesize experiences, and to utilize what has been learned to promote the success of the impelling force of instinct. By this definition the ants and bees are endowed with an elementary type of intelligence so far as they utilize the memory of their sensory observations in the performance of instinctive acts, and it seems obvious that all instinctive adaptations to environment require elementary intelligence. Instinctive movements are futile unless adapted to environment, and adaptation requires observation and memory. On the other hand, intelligence is as inert as a book on a shelf unless motivated by some instinctive interest or drive. A strong instinctive motivation with its appropriate emotion utilizes only that part of the intellectual field that applies to the situation at hand and inhibits all other sensations and thoughts. Instinct, learning and intelligence are inseparable in respect to their normal functioning, although they are to some extent localizable in different parts of the brain, and defects in behavior can to some extent be diagnosed neurologically.

Human intelligence is predominantly dependent on the cerebral cortex and association tracts. Posterior to the motor area the brain is arranged for the acquisition of knowledge. Here are located all the primary and secondary sensory areas and their subcortical connections which provide for the following activities: reception and elaboration of sensation; retention in memory and the formation of concepts; orientation, symbolization, calculation and discrimination. Anterior to the motor area the frontal lobes synthesize the information collected by the posterior areas, form judgments, develop and supervise the more complicated plans, and represent intelligence in respect to morals, ethics, wisdom and diplomacy.

#### HYPOTHETIC LEVELS OF PSYCHOLOGIC FUNCTION

In the neurologic analysis of motor functions it has been found useful to study the different stages or levels of motor integration and their relationship to the structural arrangement of the nervous system. The same plan may be applied in the analysis of psychologic integration, and the following outline is suggested with the full realization of its inadequacy and of the wide borderlines and extensive overlaps between the different hypothetic stages.

1. The first level, that of sensory perception, is represented anatomically by the cortical areas in which the various sensory tracts from the periphery terminate. The location of these areas is fairly well known for each type of sensation, and lesions affecting them cause impairment of sensations.

2. The second level, that of sensory integration, is concerned with the sensory memories, the retention, recognition and recall of sensations; also with discrimination in respect to similarities and differences of sensations experienced. Spatial and temporal relations and the identification of objects, symbols and colors are effected by sensory integration. The cortical areas corresponding to this level are adjacent to the primary areas for each type of sensation. Lesions affecting these areas cause impairment of sensory memory, either of recognition or recall or both; and varying types and degrees of agnosias, including the so-called sensory

aphasias, simultanagnosia, constructive apraxia, disorientation and Gerstmann's syndrome.

3. The third level may be considered to consist of the integration of various sensations related to the same experience by the process of associations or associative memory, and their translation into meanings and concepts. Recognition, discrimination and recall are here operating in the collective sense so far as the various memory areas representing the different types of sensation contribute to a common concept or idea. Anatomically, this stage of integration is represented by the subcortical association and commissural tracts connecting the various secondary cortical areas, and the interruption of these tracts causes impairment of associative memory and of the availability of concepts.

4. At the fourth level, or perhaps at an earlier stage, sensation synthesized into meaning awakens interest in the form of some instinctive disposition which determines the type of behavior which is to result. Characteristic emotions are manifested, and a general attitude of animation results which calls for action. The anatomic areas which seem to be of prime importance in relation to the instinctive motivations and emotional expressions are generally considered to be in the diencephalon.

5. The fifth stage of psychologic integration is the utilization of intelligence and all of the physical capacities of the organism for the purpose of attaining the objective demanded by some particular instinctive motivation. This process includes a more or less extensive analysis of the situation and the formation of a plan of action. All parts of the brain are utilized in this stage, although special patterns are selected which are appropriate and applicable to each situation, while others are inhibited.

6. The sixth stage of this hypothetical series is that of execution of the plan, or voluntary action. This includes voluntary motions critically directed, and modified or changed according to changing circumstances throughout the duration of the action. This process also requires constant observations, concentration of attention and a continuation of the activity of the intelligence, interest and emotions. At this level the motor areas of the brain, in particular the precentral and the premotor convolutions, are concerned, as are also the subcortical tracts leading into the motor region, and the projection tracts to the periphery. In addition to the familiar types of paralysis resulting from lesions of the motor areas and tracts, lesions of the subcortical association and commissural tracts connecting with the motor cortex give rise to ideokinetic and sympathetic apraxia.

The anatomic pathways in this series of activities would include (1) sensory end-organ and afferent pathway to primary sensory cortex, (2) primary sensory cortex to secondary (adjacent) area, (3) secondary area to other secondary areas via association tracts, (4) secondary areas for sensation to thalamus and hypothalamus, (5) basal region to adjacent vegetative and emotional centers and to widespread cortical areas, (6) convergence of impulses to the precentral (and premotor) cortex, and via projection tracts to the muscles.

The brain might be compared to a radio receiving set, the sensory end-organs representing the antennas, the afferent tracts the lead-in wires; in the brain are the amplifiers, condensers, shunt circuits, resistances, potentiometers, on-and-off switches, selectors and transformers. A and B currents are utilized, and ions are traveling

in all directions in tuned circuits. And, curiously enough, to carry the analogy a little further, the net result of much activity is frequently blatant sounds from the loud speaker.

With the foregoing conception of the successive levels of psychologic integration and of the activities implied as occurring at each level, the broader concept of "total personality" may be developed.

The neurologic concept of the total personality is complex and consists of concepts of each of the numerous factors into which personality can be divided. It provides for each factor of personality a structural basis and a physiologic activity. It postulates the inheritance by each animal of a nervous system characteristic of its species and variable with the individual, which determines definitely the capacities and the limitations of all behavior. It applies the theory of neurobiotaxis as a working hypothesis which helps to explain embryonal development as well as the processes of learning, of thought associations, of habit formation and of the "conditionings" not only of reflexes but also of emotional and instinctive activities. It recognizes the effect of endocrine hormones in modifying behavior by their selective action of the cell patterns of the nervous system. It emphasizes the importance of the instinctive drives and of the neural patterns on which they are dependent. Personality characteristics are assumed to be predetermined to a large extent for each individual by inherited arrangements in the neuronal patterns in the diencephalon which represent the instinctive trends. It considers intelligence as the expression of the faculties of observation, memory, concept formation, thought association, discrimination, calculation, reason, judgment and wisdom and it accepts the view that these faculties are exercised solely in response to instinctive motivation. It visualizes "personality" as being in a constant state of flux which depends on internal or external environmental factors, either physiologic or pathologic, and as passing through various stages, or ages, of development.

The neurologic conception of "total personality" may be compared to the mechanic's conception of the "total automobile" with regard to the performance of the machine. When it is out of order the mechanic tries to locate the trouble, but he can do this only if he knows the structure and function of each part.

#### CONSTITUTIONAL PSYCHOPATHIC INFERIORITY

In people as in automobiles there is much variation with regard to performance, independent of any broken or worn out parts. In machines this is manifested in design and structural material, in degrees of power, speed, durability and appearance, and in the comfort, safety, satisfaction and service they provide, to which should be added the pride or humility they incite in those to whom they belong.

Neurologically conceived, constitutional psychopathic inferiority implies personalities which fail in some important adjustment to environment largely because of "constitutional" conditions with which they are born. Theoretically, this implies variation from the average "normal" in the arrangement of the inherited structural patterns of the brain cells. Since the behavior of psychopathic inferiors does not correlate with intelligence quotients and is characterized to a large extent by emotional instability, together with over or under developed instinctive trends, it may be inferred that the cell patterns in the diencephalon representing the instinctive motivations deviate from those of the nor-

mally adapted individual and that the cortical areas are not at fault in this condition. The relative fixity of personality traits, as compared to the capacity to acquire knowledge, may be explained by the representations of innate dispositions in the primitive structures while intelligence is the function of the neopallium. The manifestations of psychopathic inferiority (and superiority) vary in a sliding scale comparable to that of intelligence. It is to be regretted that we as yet have no easily applied or practical method of estimating the personality quotient as we have the intelligence quotient.

#### PSYCHONEUROSIS

By common consent the psychoneuroses are termed functional conditions, and the basic cause is said to be psychogenic. The symptoms are reactions to life's failures and are not due to pathologic changes in the tissue. But to satisfy the concepts of neurology, the symptoms of the psychoneuroses require explanation, at least in theory, in terms of physical activities in the nervous system. A clue to the answer may be found in Pavlov's report of the development of neurosis in a dog under experimental conditions. Here the neurosis appeared when, after conditioned reflexes had been successfully developed, the dog was unable to discriminate between the changing signals and he failed in his adaptations. In theory the correlated physical activities may in part be conceived as follows: During the period of the successful development of conditioned reflexes, reflex patterns, or engrams, were developed by the process of neurobiotaxis. So long as the dog's adaptations were successful, no harmful emotional tension resulted. Failure to interpret correctly the signals resulted in the distressing emotions of uncertainty, confusion and frustration. May it not be conceived that distressing emotions are physically the expression of spreading and diffuse currents of polarization with cross currents which tend to disrupt the unstable engrams of recently formed conditioned reflexes, and to a less extent the more stable engrams of normal behavior? This concept may be an idle flight of fancy, but is not the neurologist, as well as other theorists, entitled to exercise imagination?

The variability of individuals with regard to the tendency to develop psychoneuroses remains to be explained. In this respect the innate structural arrangement of the nervous system is a factor, as in the case of psychopathic inferiority; many writers consider the neuroses to be in a large extent the expression of inferiority. Another factor to be considered is that of hypoplasia of the nervous tissue, comparable to hypoplasia in various other tissues. May not neurasthenia be in part the expression of such hypoplasia?

#### PSYCHOSES

In the field of the psychoses the accumulations of biologic science have promoted the correlations of mental symptoms and changes of personality with physical changes in the brain in terms of neuropathology and biochemistry, including hormonal reactions and electrical polarizations. In the classification of mental diseases only two important groups still remain in the list of the so-called functional psychoses; viz., manic-depressive and schizophrenia. These still defy analysis with regard to the basic etiologic factors or the physical conditions in the brain cells which are manifested in symptoms. In both of these groups the abnormal behavior indicates disturbances in the patterns of instinctive motivation and emotion rather than of intel-

ligence. The ups and downs of the cyclothymics may be conceived to correlate with corresponding degrees of cellular activity and polarization in the diencephalon, without disarrangement of the patterns as such, while in schizophrenia the symptoms of dissociation of the instincts, emotions and intelligence suggests a disarrangement of the neuron patterns and inharmonious polarizations in the basal region in which instinctive motivations arise. It seems probable that, to a certain degree, the same factors are at work in these two types of psychoses that are recognized in the etiology of the psychoneuroses, viz., the secondary effects of frustrations; but this theory is inadequate to explain these psychoses.

The neurologic approach to the problems of psychiatry is physiologically analytic and diagnostic, not therapeutic, and it can never replace psychologic analysis; but it contributes to the science of psychiatry in that it broadens the concepts of the relations of the structures of the nervous system with the manifestations of behavior.

In conclusion it may be stated that neurology has made its share of contributions to the science of psychiatry, and it should be emphasized that the neurologic aspects of psychiatry must be correlated with the psychologic aspects to attain the best available conception of human personality and its deviations from normality.

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### ACUTE GLOMERULONEPHRITIS WITH SPECIAL REFERENCE TO THE COURSE AND PROGNOSIS

A STUDY OF 150 CASES

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Although there is extensive literature on the subject of acute nephritis, some of its practical aspects appear to escape recognition or to be regarded too lightly. If the classic textbook picture of hematuria, hypertension and edema is considered essential for a diagnosis of acute nephritis, then many milder forms will pass unrecognized, and not until years later, when chronic nephritis has set in, will the true significance of the mild early episode become apparent.

While the opinion is not unanimous that chronic glomerulonephritis is always a consequence of an acute form, in many cases the chronic form is observed to evolve from an acute attack, either immediately by direct continuity or after a succession of relapses and remissions during which the patient is apparently well. The absence of a history of an acute attack in many cases of chronic nephritis may be explained to some extent by the fact that during the acute phase the classic picture of hematuria, edema and hypertension was lacking. A stumbling block in the proper appraisal of acute nephritis has been the limited view taken of the cause and pathogenesis by many observers. Formerly, hematuria, edema and hypertension were

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required for a diagnosis, but within recent times the concept of acute nephritis has changed. It has been emphasized that mild subclinical forms may exist, pass undiagnosed and untreated, and progress insidiously into the chronic stage before it is realized that the kidneys have become irreparably damaged. This concept has been confirmed and extended recently by the histologic examinations of Bell,<sup>1</sup> who stated that there are innumerable transitions between subclinical glo-

TABLE 1.—Comparison of Ages with Outcome in 150 Cases of Acute Glomerulonephritis

Age, Years	Number of Cases	Patient Recovered		Condition Became Chronic		Patient Died	
		Number	Per-centage	Number	Per-centage	Number	Per-centage
0-10	26	12	46.15	11	42.30	3	11.53
11-20	52	28	53.85	20	38.46	4	7.69
21-30	27	12	44.44	10	37.03	5	18.51
31-40	25	13	52.00	7	28.00	5	20.00
41-50	15	7	46.66	4	26.66	4	26.66
51-60	4	2	50.00	1	25.00	1	25.00
61-70	1	0	0	0	0	1	100.00
Total	150	74	49.33	53	35.33	23	15.33

merulitis and clinical acute nephritis and that fundamentally the same type of reaction occurs in the two forms, the difference existing only in the intensity of the disease. This better understanding of the clinical and histologic features of acute nephritis removes one of the main obstacles which has retarded progress in this field.

Our presentation comprises a study of 150 cases of acute glomerulonephritis observed in the acute stage and followed for periods varying from two to fourteen years. We have had the opportunity of observing some patients in the acute stage of nephritis who have passed through the transitional stage into the chronic phase and have seen renal insufficiency gradually develop and the patients die of uremia or of some other complication of chronic nephritis. The purpose of this report is to emphasize the following aspects of the problem of acute nephritis: (a) The importance of a number of diseases which may precipitate acute nephritis but are not generally considered as common etiologic factors. (b) The significance of early recognition of the signs and symptoms of milder forms of the disease. (c) The necessity of careful observation of patients in the quiescent period that often immediately follows the acute phase. In this period, which is called here the transitional stage, the sequelae, both immediate and remote, may be recognized and the patient may be protected from future ill consequences by judicious treatment. (d) The value of measures which aid in determining whether or not the renal lesion has completely healed. The vital importance of adequate treatment cannot be overestimated, for the patient who appears clinically cured may have some residual inflammation which may progress unless it is treated effectively.

#### CLINICAL DATA

The criteria for the diagnosis did not include definite retention of nitrogenous substances, hypertension, edema or hematuria. A patient who had albumin, red blood cells, casts and pus cells in the urine for a week or more was considered to have acute nephritis. In table 1 the age incidence is compared with the outcome. Of the 150 patients 105, or 70 per cent, were

under 30 years of age. Of this number fifty-two, or 39.52 per cent, recovered; the disease of 41, or 39.04 per cent, became chronic, and twelve, or 11.43 per cent, died. Of the forty-five patients over 30 years of age twenty-two, or 48.88 per cent, recovered; the disease of twelve, or 26.66 per cent, became chronic, and eleven, or 24.44 per cent, died. This table emphasizes that acute nephritis in an older group is probably more serious and has a higher mortality rate than in a younger group. The patients were predominantly under 30 years of age, but only twenty-six, or 17.33 per cent, of the total were under the age of 10.

The age and sex incidence is given in table 2. In the age group below 10 years the boys outnumbered the girls almost 6 to 1, but this ratio did not prevail throughout the series. Of the total number of patients 102 were males and forty-eight were females, showing a ratio of about 2 to 1. Table 3 shows the relation of the age and sex to the progress of the disease. Of the seventy-four patients who recovered, or 49.33 per cent of the total series, fifty-two, or 70.27 per cent, were males and averaged 23.23 years of age. The number of females in this group was smaller, twenty-two, or 29.73 per cent, yet the average age was practically the same. In the group of patients who died, males predominated almost 3 to 1 and the average age of both sexes was higher than that of the patients who recovered or in whom the condition became chronic. Twenty-three, or 15.33 per cent, of the patients died; seventeen, or 73.91 per cent, were males and 6, or 26.09 per cent, were females. The average age of the males was 30.58 years and of the females 20.33 years.

In table 4 the antecedent diseases in 150 cases of acute nephritis are given. Formerly it was thought that severe infections such as scarlet fever and septic sore throat were the chief forerunners of acute nephritis, but now it is agreed that almost any infectious disease may precede the onset of renal inflammation. The commonest antecedent disorders in our series were

TABLE 2.—Age and Sex Incidence in 150 Cases of Acute Glomerulonephritis

Age	Number	Percentage	Number	Percentage	Number	Percentage
		of Total	of Males	of Total	of Females	of Total
0-10	26	17.33	22	14.66	4	2.66
11-20	52	34.66	27	18.00	25	16.66
21-30	27	18.00	17	11.33	10	6.66
31-40	25	16.66	21	14.00	4	2.66
41-50	15	10.00	10	6.66	5	3.33
51-60	4	2.66	4	2.66	0	0
61-70	1	0.66	1	0.66	0	0
Total	150	100.00	102	68.00	48	32.00

diseases caused by streptococcal infections of the throat and upper part of the respiratory tract. Many authors<sup>2</sup> have stressed the importance of this relationship. The point of emphasis is that infections of the upper part of the respiratory tract which are often not thought of seriously may be forerunners of acute nephritis.

Nephritis followed such infections in ninety-nine, or 66 per cent, of our 150 cases. In 67.6 per cent of seventy-eight cases studied by Winkenwerder, McLeod

1. Bell, E. T.: Early Stages of Glomerulonephritis, *Am. J. Path.* **12**: 801 (Nov.) 1936.

2. Longcope, W. T.: Pathogenesis of Glomerular Nephritis, *Bull. Johns Hopkins Hosp.* **45**: 335 (Dec.) 1929. Volhard, F., in von Bergmann, G., and Sackel, R.: *Handbuch der inneren Medizin*, Berlin, Julius Springer, 1931, vol. 6, pt. 2, p. 1179. Fishberg, A. M.: Hypertension and Nephritis, Philadelphia, Lea & Febiger, 1934. Bell, E. T.: The Pathology and Pathogenesis of Clinical Acute Nephritis, *Am. J. Path.* **12**: 497 (July) 1937. Christian, H. A.: Types of Nephritis and Their Management, *J. A. M. A.* **102**: 169 (Jan. 20) 1934. Guild, H. C.: Prognosis of Acute Glomerular Nephritis in Childhood, *Bull. Johns Hopkins Hosp.* **48**: 193 (April) 1931. Boyd, G. L.: Acute Nephritis in Children, *Canad. M. A. J.* **17**: 894 (Aug.) 1927.

and Baker,<sup>3</sup> nephritis was preceded by infections of the upper part of the respiratory tract, which took the form of tonsillitis in 44 per cent. Reports from Gray,<sup>4</sup> Hill,<sup>5</sup> Osman,<sup>6</sup> Rake<sup>7</sup> and Bell and Hartzell<sup>8</sup> disclose the comparative insignificance of scarlet fever as a

TABLE 3.—Relation of Age and Sex to the Progress of the Disease

	Number	Percentage of Total	Number of Males	Average Age of Males	Number of Females	Average Age of Females	General Average Age	Youngest Patient	Oldest Patient
Patient recovered.....	74	49.33	52	23.23	22	23.09	23.18	3	59
Condition became chronic.....	53	35.33	33	21.96	20	18.74	20.74	4	51
Patient died.....	23	15.33	17	30.38	6	20.33	27.94	1	65
Total.....	150	100.00	102	24.05	48	20.93	23.06	1	65

cause of acute nephritis. When it becomes more widely recognized that there is a tendency for nephritis to develop in patients with simple infections of the upper part of the respiratory tract and other pyogenic infections, repeated urinalyses will reveal many more cases of early acute nephritis.

Twenty-three of our patients with acute nephritis died, as seen in table 5, but only twelve of these, or 52.17 per cent, died of acute glomerulonephritis or uremia. Pneumonia, septicemia, burns, erysipelas and heart failure caused death in the remaining eleven cases. It is often difficult to determine the part played by nephritis in causing death and the part contributed by associated diseases. It has been our practice to consider nephritis as the primary cause of death unless some other obvious cause is found. When our death rate of 15.33 per cent is compared with that reported in studies of similar series (Richter<sup>9</sup> and McPhee and

#### CLINICAL SYNDROMES

In acute nephritis, as in the chronic form, there are five clinical syndromes: (a) the urinary syndrome, (b) hypertension, (c) edema, (d) retention of nitrogenous products in the blood and (e) uremia. These syndromes need not all be present at one time; they are variable and transitory. One may develop and dominate the clinical picture for a period and then disappear temporarily or permanently. The clinical syndromes which occurred in the 150 cases under discussion are analyzed and their relation to the progress is shown in table 6.

(a) *The Urinary Syndrome.*—The urinary syndrome is the most important because it is always present, is the most accessible and is the least likely to be misinterpreted. The diagnosis of acute nephritis was not made in the absence of albuminuria in any case. Albuminuria must be considered evidence of nephritis unless it is proved otherwise. In many of

TABLE 5.—Causes of Death in Twenty-Three Cases of Acute Glomerulonephritis

Cause	Total Number of Deaths	Percentage of Total	Number of Males	Number of Females	Average Age	Youngest Patient	Oldest Patient
Acute glomerulonephritis.....	12	52.17	8	4	26.91	3	50
Pneumonia.....	5	21.73	4	1	39.80	26	51
Septicemia.....	2	8.69	1	0	8.00	1	15
Burns.....	2	8.69	1	1	20.00	15	25
Erysipelas.....	1	4.34	1	0	65.00	0	65
Heart failure.....	1	4.34	1	0	43.00	0	43
Total.....	23	100.00	17	6	31.50	0	65

our cases only the urinary syndrome was present when the diagnosis was made. In all cases albuminuria was accompanied by other changes in the urinary picture; the specific gravity was usually elevated, and red

TABLE 4.—Antecedent Diseases in 150 Cases of Acute Glomerulonephritis

Diseases	Number of Cases	Percentage of Total	Patient Recovered	Percentage of Total	Condition Became Chronic	Percentage of Total	Patient Died of Acute Nephritis	Percentage of Total	Patient Died of Other Causes	Percentage of Total	Total Number of Deaths	Percentage of Total
Infections of the upper part of the respiratory tract.....	99	66.00	43	28.06	42	28.00	3	5.23	6	4.00	14	9.33
Peritonsillar abscess.....	22	14.66	18	12.00	3	2.00	0	0	1	0.66	1	0.66
Cervical adenitis.....	6	4.00	5	3.33	1	0.66	0	0	0	0	0	0
.....	6	4.00	5	3.33	0	0	1	0.66	0	0	1	0.66
.....	5	3.33	1	0.66	2	1.33	2	1.33	0	0	2	1.33
.....	4	2.66	2	1.33	1	0.66	0	0	1	0.66	1	0.66
Burns.....	2	1.33	0	0	0	0	0	0	2	1.33	2	1.33
Purpura (toxic).....	2	1.33	0	0	2	1.33	0	0	0	0	0	0
Scarlet fever.....	2	1.33	0	0	2	1.33	0	0	0	0	0	0
Erysipelas.....	1	0.66	0	0	0	0	0	0	1	0.66	1	0.66
Rheumatic fever.....	1	0.66	0	0	0	0	1	0.66	0	0	1	0.66
Total.....	150	100.00	74	49.33	53	35.33	12	8.00	11	7.33	23	15.33

Kaye<sup>10</sup>) it appears to be rather high. The mortality rate depends to some extent on the social conditions of the patient and on the promptness with which adequate treatment is given.

3. Winkenwerder, W. L.; McLeod, Neil, and Baker, Myles: Infection and Hemorrhagic Nephritis, *Arch. Int. Med.* 56: 297 (Aug.) 1935.
4. Gray, John: Causes and Sequences in Nephritis, *J. Path. & Bact.* 31: 191 (April) 1928.
5. Hill, L. C.: Febrile Albuminuria, with Special Reference to Pneumonia, *Quart. J. Med.* 22: 305 (Jan.) 1929.
6. Osman, A. A.: Aetiology and Prognosis of Acute Nephritis in Children and Young Adults: Clinical Study of Fifty-Six Cases, *Guy's Hosp. Rep.* 75: 306 (July) 1925.
7. Rake, G. W.: The Role of Infection in the Aetiology of Bright's Disease, *Guy's Hosp. Gaz.* 42: 242 (June 2) 1928.
8. Bell, E. T., and Hartzell, T. B.: Etiology and Development of Glomerulonephritis, *Arch. Int. Med.* 29: 762 (June) 1922.
9. Richter, A. B.: Prognosis in Acute Glomerular Nephritis, *Ann. Int. Med.* 9: 1057 (Feb.) 1936.
10. McPhee, I. M., and Kaye, Geoffrey: Some Observations on the Prognosis in Acute Nephritis, *M. J. Australia* 2: 14 (July 2) 1932.

blood cells, pus cells and granular casts were present. In some cases it was difficult to decide whether the urinary changes only signified benign febrile albuminuria or were identification marks of a mild but genuine acute nephritis.

In our cases the albumin in the urine varied from a few grams to as much as 20 Gm. a day, but the quantity seemed to have little effect on the outcome. According to Bell<sup>1</sup> the amount of albumin does not correspond to the degree of glomerular damage because the most severely damaged glomeruli have closed capillaries and do not transmit albumin.

The term hemorrhagic nephritis is often used interchangeably with glomerulonephritis because in some cases of acute glomerulonephritis there is gross



hematuria. In this series gross hematuria was present in forty-eight, or 32 per cent, of the cases; in the remainder red blood cells were found on microscopic examination of the urinary sediment.

(b) *Hypertension and the Heart.*—Hypertension was formerly looked on as a constant feature in acute nephritis. In table 6 the incidence of hypertension is given in relation to the ultimate outcome of the disease. When hypertension was present in our cases the systolic blood pressure ranged between 140 and 180 mm. and the diastolic between 90 and 110 mm. Hypertension may be absent throughout the course of the disease and yet chronic glomerulonephritis may develop; on the other hand, we have studied patients with excessive hypertension, prominent changes in the fundus oculi and hypertensive encephalopathy who have recovered completely.

The seriousness of acute nephritis depends at times not so much on the renal inflammation as on disturbances in the function of the heart. Myocardial insufficiency may develop, and there may be either frank heart failure or milder symptoms, such as palpitation, tachycardia, pallor, enlargement or pulmonary congestion. The excessive burden of hypertension cannot in most cases be held responsible for cardiac embarrassment; many authors have attributed it to a systemic vascular disorder due to the same agent that causes the acute nephritis. In table 5 it is shown that one of our patients died of heart failure, but this does not reflect the importance of cardiac insufficiency in the series, for in other cases myocardial damage was a prominent factor in the unfavorable outcome although it was not considered the primary cause of death. The role of myocardial insufficiency in acute nephritis varies according to different authors. In Cecil's<sup>11</sup> textbook it is stated that the heart as a rule is not damaged in acute nephritis. Levy<sup>12</sup> and Murphy, Grill and Moxon<sup>13</sup> discussed cases of acute nephritis in which heart failure occurred without hypertension. More recently Master, Jaffe and Dack<sup>14</sup> found cardiac insufficiency to be common in a series of twenty-four cases and at times to be severe enough to cause death. Rubin and Rapoport<sup>15</sup> studied the cardiac complications of acute hemorrhagic nephritis and concluded that the involvement of the heart is caused by a combination of hypertension and myocardial damage from infection. Hypertension was present in all their cases. They examined fifty-five children and found severe myocardial damage in fourteen and signs of frank failure in twelve.

(c) *Edema.*—Edema developed in eighty-six, or 57.33 per cent, of our 100 cases, but in no case was it a serious complication. As seen in table 6, there was no relationship between the degree of edema and the course of the disease. Puffiness about the eyes, slight ascites and swollen ankles were frequently observed, but as a rule when generalized anasarca developed the disease had passed from the acute stage of nephritis into the subacute or chronic form. From determinations of the plasma protein level it was found

that the edema of acute nephritis in most instances preceded any pronounced changes in the plasma protein level, and there appeared to be no causal relationship between the two. In some cases of severe acute nephritis with prominent edema, the plasma protein level was found to sink gradually as the disease progressed. There may be three kinds of edema in acute nephritis,

TABLE 6.—*Syndromes in 150 Cases of Acute Glomerulonephritis*

Syndrome	Patient Recovered		Condition Became Chronic		Patient Died	
	Number	Percentage	Number	Percentage	Number	Percentage
Urinary.....	74	100.00	53	100.00	23	100.00
Hypertension.....	25	33.77	26	49.05	8	34.78
Edema.....	42	56.75	34	64.15	10	43.77
Nitrogen retention..	23	31.08	25	47.16	18	78.26
Uremia (genuine)...	0	0	2	3.77	5	34.78

the nephritic, the nephrotic and the cardiac, and it is the belief of Page,<sup>16</sup> Rennie<sup>17</sup> and Peters and Van Slyke<sup>18</sup> that in the earlier periods nephritic edema is caused by increased capillary permeability.

(d) *Nitrogen Retention.*—In sixty-six, or 44.44 per cent, of our 150 cases there was some degree of nitrogen retention. The level of blood urea nitrogen may be normal during the early periods of the disease and then rise suddenly after the first seven or eight days. Oliguria or even anuria is likely to be present in early acute glomerulonephritis, and, since the output of urea nitrogen is dependent on the amount of urine excreted, the nonprotein nitrogen level of the blood may rise swiftly at this time. After several days, however, diuresis usually sets in, and this is followed by a prompt reduction of the blood nitrogen. A gradual rise in nonprotein nitrogen over a period of three weeks, as shown by repeated examinations, is a grave prognostic sign.

(e) *Uremia.*—As seen in table 6, there were ten cases or 6.7 per cent of the total series of 150 cases, in which there was genuine uremia. Uremia is a difficult syndrome to evaluate because the term is often used to describe both the genuine and the convulsive, or false, form of uremia. Convulsive uremia is identified by headache, visual disturbances and choked disks. It

TABLE 7.—*Sedimentation Rate of a Patient with Acute Glomerulonephritis Who Recovered*

Date	30 Minutes	45 Minutes	1 Hour	2 Hours
11/19/33.....	20	32	50	92
12/ 3/36.....	8	13	20	49
12/16/36.....	7	12	17	35
12/30/36.....	6	10	15	24
1/ 7/37.....	5	10	14	23
1/22/37.....	4	7	10	24
2/12/37.....	6	11	17	20
4/10/37.....	1	2	2	4
6/25/37.....	1½	2	2½	10
8/20/37.....	1	2	3	8

is practically always associated with, and is probably caused by, hypertension; nitrogen retention and anuria are unrelated to its development. In sharp contrast to the convulsive form is genuine or true uremia, which is a manifestation of renal insufficiency and is unrelated to hypertension.

11. Cecil, R. L.: A Textbook of Medicine, Philadelphia, W. B. Saunders Company, 1937.  
12. Levy, I. J.: Cardiac Response in Acute Diffuse Glomerular Nephritis, *Am. Heart J.* 5: 277 (Feb.) 1930.  
13. Murphy, F. D.; Grill, John, and Moxon, Gail F.: Acute Diffuse Glomerular Nephritis: Study of Ninety-Four Cases with Special Consideration of the Stage of Transition into the Chronic Form, *Arch. Int. Med.* 54: 483 (Oct.) 1934.  
14. Master, A. M.; Jaffe, H. L., and Dack, Simon: The Heart in Acute Nephritis, *Arch. Int. Med.* 60: 1016 (Dec.) 1937.  
15. Rubin, M. L., and Rapoport, Milton: Cardiac Complications of Acute Hemorrhagic Nephritis, *Am. J. Dis. Child.* 55: 244 (Feb.) 1938.

16. Page, I. H.: The Management of Acute, Chronic and Terminal Bright's Disease, *M. Clin. North America* 18: 867 (Nov.) 1934.  
17. Rennie, J. B.: Edema in Nephritis, *Quart. J. Med.* 2: 521 (Oct.) 1933.  
18. Peters, J. P., and Van Slyke, D. D.: Quantitative Clinical Chemistry, Baltimore, Williams & Wilkins Company, 1932.

## COURSE

Acute nephritis follows one of several courses: The patient may die in the acute attack, subacute or chronic nephritis may develop, complete healing may occur or slight albuminuria with no formed elements in the urinary sediment may persist for years. The last-mentioned type of development was pointed out by Addis<sup>19</sup> as an example of healing with defect. Most patients with acute nephritis recover within six weeks. In some cases healing appears to be complete when in reality the renal inflammation has only become less intense, and the patient is dismissed from further observation. He may be oblivious of the fact that the kidneys are damaged until years later, when evidence of permanent injury appears. It is therefore most important to determine whether or not the renal lesion has healed before dismissing a nephritic patient from treatment. After the severity of the acute phase has passed there is a period of transition during which recovery may occur or the disease may become chronic. Routine tests, such as the phenolsulfonphthalein test, analysis of the blood for retained nitrogen and determination of the blood pressure, may lead one to believe that the renal lesion is healing satisfactorily but more exhaustive examination may prove that this is not the case.

No one test has been found a reliable prognostic index in every case, but the result obtained from a combination of several measures may be used as a fairly accurate guide. A study of the dilution-concentration test of Volhard or one of its modifications, the blood urea clearance test, and determination of the sedimentation rate of the erythrocytes have been particularly helpful. The quantitative methods of urinalysis described by Addis<sup>20</sup> are of diagnostic and prognostic value, especially in determining whether the renal lesion is still active or is becoming latent. The blood urea clearance test as described by Möller, McIntosh and Van Slyke<sup>21</sup> was particularly helpful in the study of our cases. As reported previously,<sup>14</sup> the urea clearance test repeated over a period of weeks will show whether the trend is toward healing or chronicity. Cullen, Nelson and Holmes<sup>22</sup> made a study of the urea clearance of children recovering from acute nephritis for the purpose of detecting residual renal damage and

TABLE 8.—Sedimentation Rate of a Patient Who Died of Acute Glomerulonephritis

Date	30 Minutes	45 Minutes	1 Hour	2 Hours
2/13/37.....	17	20	20	60
2/16/37.....	28	42	60	90
2/21/37.....	32	45	78	110
3/1/37.....	37	48	82	117
3/7/37.....	102	126	132	156
3/16/37.....	102	126	132	156
3/22/37.....	120	128	147	160

found the test to be of value in determining the extent of the renal involvement during the acute stage of nephritis. The dilution-concentration test at times appears to be a more valuable aid than the other tests; yet an accurate prognosis depends not on any one test but on a composite picture of all tests. Alving and Van Slyke<sup>23</sup> have compared the prognostic significance

of the urea clearance and dilution-concentration tests. Determination of the sedimentation rate of the erythrocytes has proved to be of distinct aid in prognosis. This, like the other tests, is not an infallible guide, since some patients with active lesions have a normal sedimentation rate. Within recent years Cutler<sup>24</sup> has emphasized the importance of using a standard method in performing the test, and he has pointed out its limitations in the field of internal medicine. Tables 7, 8 and 9 show variations observed in the sedimentation rate of three patients with acute nephritis; one recovered, another died and in the third the condition

TABLE 9.—Sedimentation Rate in a Case of Acute Glomerulonephritis Which Became Chronic

Date	30 Minutes	45 Minutes	1 Hour	2 Hours
2/8/37.....	70	113	130	140
2/16/37.....	40	62	18	127
2/22/37.....	34	57	75	112
3/1/37.....	37	50	79	107
3/15/37.....	26	38	58	93
3/23/37.....	19	34	47	92
5/1/37.....	27	44	55	88
6/3/37.....	20	40	52	80
6/25/37.....	19	35	50	78
7/2/37.....	20	45	56	82

became chronic. We have found that, taken with the other tests, the determination of the sedimentation rate is a helpful prognostic aid. However, repeated tests at frequent intervals are necessary, since a single determination may lead to false impressions. When the renal lesion is becoming quiescent the rate falls, and when the lesion is progressing it is more rapid. The fact that the test is simple and easy to perform adds to its practical value.

## COMMENT

The recent publication of Baehr<sup>25</sup> emphasizes that there is no unanimity of opinion regarding the significance of the so-called milder forms of acute glomerulonephritis. He expressed the opinion that an early diagnosis can be made positively only if, in addition to the urinary abnormalities, there are other clinical evidences of vascular disturbances. Our observations convince us that there are mild forms of acute nephritis characterized by albuminuria, microscopic hematuria and casts which progress eventually into chronic glomerulonephritis without developing into the classic picture of gross hematuria, hypertension and edema. The fact that so many patients with chronic nephritis have no history of an acute attack may indicate that the first stage was so mild as to be unrecognized and that nephritis was not suspected until urinary abnormalities were discovered some time later. Whether chronic glomerulonephritis always evolves from the acute form is an unsettled question. Volhard<sup>2</sup> said that in every case chronic nephritis is the result of an unhealed acute form, but Aldrich<sup>26</sup> found no instances of chronic nephritis following an acute attack in 129 cases studied from one to twelve years. Aldrich and Boyle<sup>27</sup> said that in some cases glomerulonephritis develops slowly and insidiously without having had an acute stage. In a series of 186 cases of chronic nephritis, Nye<sup>28</sup> found

19. Addis, Thomas: A Clinical Classification of Bright's Disease, J. A. M. A. 85: 163 (July 18) 1925.

20. Addis, Thomas: Haemorrhagic Bright's Disease: Natural History, Bull. Johns Hopkins Hosp. 49: 203 (Oct.) 1931.

21. Möller, Eggert; McIntosh, J. F., and Van Slyke, D. D.: Studies of Urea Excretion: II. Relationship Between Urine Volume and Rate of Urea Excretion by Normal Adults, J. Clin. Investigation 6: 427 (Dec.) 1928.

22. Cullen, G. E.; Nelson, W. E., and Holmes, F. E.: Studies in Kidney Function in Children: Urea Clearance Values, J. Clin. Investigation 14: 563 (Sept.) 1935.

23. Alving, A. S., and Van Slyke, D. D.: Significance of Concentration and Dilution Test in Bright's Disease, J. Clin. Investigation 13: 969 (Nov.) 1934.

24. Cutler, J. W.: The Practical Application of the Blood Sedimentation Test in General Medicine: Observation Based on Approximately 5,000 Patients Over a Period of Six Years, Am. J. M. Sc. 183: 643 (May) 1932.

25. Baehr, George: The Nature of Glomerulonephritis, Bull. New York Acad. Med. 14: 53 (Feb.) 1938.

26. Aldrich, C. A.: Clinical Types of Nephritis in Childhood, J. A. M. A. 94: 1637 (May 24) 1930.

27. Aldrich, C. A., and Boyle, H. H.: Chronic Nonspecific Nephritis: Clinical Observations on Forty Children with Results of Treatment in Full Diets, J. A. M. A. 100: 1979 (June 24) 1933.

28. Nye, L. J.: Chronic Nephritis and Lead Poisoning, Sydney, Australia, Angus & Robertson, Ltd., 1933.

only two in which there was a history of acute nephritis or hematuria in any period of childhood. Although some patients with chronic nephritis have had renal inflammation earlier in life, Horder<sup>29</sup> stated that others are known to have been free from acute nephritis. Chronic nephritis is not a progressive disease varying in severity at different periods, according to Emerson,<sup>30</sup> but is rather a succession of distinct acute attacks distributed over a period of years, each adding to the permanent injury of the kidney as a whole.

In the opinion of such observers as Fishberg,<sup>2</sup> Bell and Hartzell,<sup>8</sup> Mosenthal,<sup>31</sup> Longcope<sup>2</sup> and Volhard<sup>2</sup> it is uncommon for acute nephritis to progress directly into the chronic stage. There are many intermediate phases that bridge the gap between the acute and the chronic. Occasionally, however, an acute attack is seen to pass directly into the chronic form. Roper<sup>32</sup> said "A silent period may ensue for years, during which time there are no symptoms," but he added that in other cases there is no silent period and the acute symptoms merge directly into chronicity. Addis<sup>19</sup> expressed the opinion that the patient with acute nephritis may pass into a latent stage which may persist for a long time.

Most authors accept the idea that unhealed acute nephritis may pass into a subacute form, but there are some who do not agree that a long period of latency or quiescence may endure in the kidney. Boyd,<sup>33</sup> Elwyn<sup>34</sup> and Fishberg<sup>2</sup> said that in order for nephritis to become chronic there must be some extrarenal infection which subjects the kidney to repeated infections or rather, repeated intoxications.

A point which deserves consideration is whether or not the course of acute nephritis can be influenced by the removal of septic foci. Platt<sup>35</sup> and Alport<sup>36</sup> expressed the opinion that there is evidence that this procedure exerts a favorable influence. The removal of the source of infection tends to slow down the progress of the disease, and the more promptly such foci are attacked the better for the patient. Guild,<sup>2</sup> from a study of thirty-four patients over a period of years, concluded that many patients return entirely to normal in spite of neglect of foci of infection after the attack of nephritis. Patients who continue to show red blood cells, albumin and casts in the urine after several months of rest in bed are discussed by Osman.<sup>37</sup> Their ultimate fate is unsatisfactory. He undertook to determine the value of tonsillectomy in a group of patients with unresolved acute nephritis and found that only one of eight consecutive patients was benefited.

It is of practical importance to determine to what degree the active inflammatory lesion is dependent on an extrarenal focus of infection and whether or not the course of acute nephritis can be influenced by such a focus. As may be seen from the foregoing discussion

the persistence of active inflammation in the kidney appears to depend on some focus of infection, either the one which originally set the disease in motion or a subsidiary extrarenal disturbance. The point to be emphasized is that treatment must be directed so as to safeguard the patient from additional infections. One requirement is that the nephritis be completely cured, if possible, before the patient is dismissed from treatment. When a patient recovers from acute nephritis the chance of a new attack is remote, but such an attack may occur. On the other hand, the person who has an unhealed renal lesion has a vulnerable kidney, and infection of the upper part of the respiratory tract, tonsillitis or exposure to cold may provoke a relapse.

Our observations have led us to conclude that many persons in whom chronic nephritis develops even years after an acute attack have had a persistent continuous inflammation in the kidney. The course during the years of transition may be characterized by periods of exacerbation due to repeated attacks of infection in the upper part of the respiratory tract and by remissions, which often occur in the summer, when such infections are not prevalent. We believe that by the careful study of our patients in the intermediate period we have been able to show that this is the case.

#### TREATMENT

The better understanding of the significance of milder grades of acute nephritis has been reflected in more effective treatment. The onset of acute nephritis may be abrupt and the course stormy, terminating either fatally or favorably in a few weeks' time, or it may be insidious and follow a long slow course. Consequently therapeutic measures vary. It must be remembered that, however mild the attack, every patient with an acute renal inflammation is a candidate for chronic nephritis, and every effort must be bent toward the complete healing of the renal lesion. The treatment used in the classic case of acute glomerulonephritis with profound renal insufficiency is well known, while the problem of the patient with a milder grade of acute nephritis and of the person in the so-called transitional period is less well understood. This problem will be discussed briefly.

The fundamental principle in treatment is to obtain as complete a rest for the inflamed kidney as possible. Therefore the patient should be put to bed and kept there until the disease has healed or become chronic. If albumin, red blood cells and casts persist in the urine after three months and other evidences of inflammation, such as hypertension, reduced urea clearance, impaired concentration ability or rapid sedimentation rate, are present, it may be assumed that chronic nephritis has developed and further rest in bed will be of no avail.

The removal of foci of infection is useful and sometimes an immediate therapeutic necessity. Diseased tonsils or sinuses, apical abscesses and foci of infection anywhere should be treated to prevent further irritation. There is a considerable difference of opinion as to the best time to remove foci of infection. We believe that this depends on the severity of the nephritis. Surgical procedures are unwise during the early stages of acute nephritis if there is evidence of renal insufficiency, because there is danger of aggravating the condition. When the severity of the initial stage is over, operative procedures may be used most advantageously.

29. Horder, Thomas: Nephritis: New Ideas and Old Facts, Practitioner 126: 289 (March) 1931.

30. Emerson, C. P.: Acute Element in Chronic Nephropathies, J. A. M. A. 77: 745 (Sept. 3) 1921.

31. Mosenthal, H. O.: The Diagnosis and Treatment of Variations in Blood Pressure and Nephritis, Oxford Monograph on Diagnosis and Treatment No. 7, New York, Oxford University Press, 1935, p. 217.

32. Roper, F. A.: The Modern View of Nephritis and Its Treatment, Clin. J. 65: 351 (Sept.) 1936.

33. Boyd, William: A Textbook of Pathology, Philadelphia, Lea & Febiger, 1934, p. 613.

34. Elwyn, Herman: Nephritis, New York, Macmillan Company, 1926, p. 142.

35. Platt, R.: Effect of Removal of Septic Foci on the Course of Nephritis, Quart. J. Med. 1: 499 (Oct.) 1932.

36. Alport, A. C.: Focal Sepsis as a Cause of Nephritis, Lancet 1: 1247 (June 11) 1932.

37. Osman, A. A.: Studies in Bright's Disease: The Removal of Septic Foci in the Upper Respiratory Tract in Cases of Unresolved Acute Nephritis, Guy's Hosp. Rep. 53: 507 (Oct.) 1933.

Keutman and McCann<sup>38</sup> have shown that a high protein diet does not retard recovery from acute glomerulonephritis. However, it is not necessary to give a patient more than a minimal amount of protein, from 0.6 to 0.8 Gm. per kilogram of body weight, during the acute stage. Since the course of the disease and the duration of the acute phase are usually short, the intake of protein and calories may be disregarded for several days. Such observers as Volhard,<sup>2</sup> Fishberg<sup>2</sup> and Stone<sup>39</sup> have said that the rigid restriction of salt, food (especially proteins) and fluids (except from 400 to 600 cc. of fruit juices) is advisable for three or four days. After this period the quantity of fluid and food is gradually increased as required.

The amount of fluid that should be given to a patient with acute nephritis varies according to the degree of renal insufficiency. When the kidney is unable to secrete urine there is little object in giving fluid, yet some authorities believe that large quantities of fluid promote diuresis and eliminate toxins. The following factors should provide guidance for the administration of fluids. If there is oliguria or anuria with a rising level of nonprotein nitrogen, sufficient fluids should be given by mouth or by vein to promote diuresis if possible. Since the output of the toxic substances is dependent to a large degree on the secretion of urine, diuresis is desired. If there are hypertension and edema of the brain with increased pressure of the cerebral spinal fluid or evidence of myocardial weakness, fluids must not be forced, for they may aggravate these complications. The presence of edema is not a serious matter and should not be the deciding factor for or against the administration of fluid. The kind of fluids to be given must be decided to suit the individual case. If there has been vomiting, dehydration, oliguria or anuria, 10 per cent dextrose solution with physiologic solution of sodium chloride is necessary in order to maintain the electrolyte pattern of the tissue fluids. If diuresis is all that is aimed at, dextrose solution may be given daily. When there is edema of the brain with increased pressure of the cerebral spinal fluid and threatening convulsions, from 100 to 200 cc. of 50 per cent sucrose or dextrose solution given intravenously may be effective in reducing the pressure of the cerebral spinal fluid.

Since anemia is often a problem met with in cases of acute nephritis, large doses of iron and ammonium citrate three or four times a day are a favorite prescription. Efforts should be made to build up the patient's resistance. Proper amounts of food rich in vitamins may be helpful. It is believed by some observers that vitamins A and D especially are valuable in protecting the patient from further infections. Diuretics are not well borne in any phase of acute nephritis, and it is unwise to use them unless there is edema of cardiac origin; in this case digitalis, theobromine or small doses of theobromine with sodium salicylate may be effective.

#### SUMMARY

1. Numerous diseases precede acute nephritis and may have an etiologic role, and there is a lack of correspondence between the seriousness of the antecedent disease and the severity, duration and termination of the nephritis.

2. The classic textbook picture of acute nephritis is often lacking, and mild forms occur which are characterized by the urinary syndrome alone. Such mild forms are frequently overlooked, and evidence of renal damage is not observed until the disease has progressed into the chronic stage and renal insufficiency has set in.

3. If success in the treatment of acute nephritis is to be achieved, prompt recognition of the early and mild types is of the first importance. After the manifest symptoms of acute nephritis have subsided there is a period called the transitional stage, in which the renal lesion may heal completely or the disease may progress into the subacute or chronic form. It is necessary to determine whether or not healing has occurred. No one test will give this information, and a combination of diagnostic aids should be employed.

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#### ABSTRACT OF DISCUSSION

DR. THOMAS ADDIS, San Francisco: The observation by Drs. Murphy and Rastetter in Milwaukee that half of their patients completely recover after passing through the initial stage of glomerular nephritis is in exact agreement with our experience in San Francisco. That is important because disagreement on this point has raised the question as to whether there may not be geographic differences in this disease analogous to the differences in the behavior of rheumatic disease on the Atlantic and Pacific Coasts. It is known now that there is at least no evidence of difference between Midwest and Far West. But neither Milwaukee nor San Francisco can tell how many of all the people who have glomerular nephritis recover. Everywhere an undetermined proportion of these people, particularly those with mild forms of the disease, escape detection and are seen by nobody. I do not believe that the disease is maintained by foci of infection or that transient generalized toxic states induced by bacterial or virus infections are often determining factors in the outcome. In this disease the end is determined by the beginning and that is why I agree with Drs. Murphy and Rastetter that the treatment of the initial stage is all important. If we follow the traditional methods we sweat, purge and starve these patients and interfere with their natural desires with respect to water by giving them either more or less than they want. But that tradition is already passing and it has begun to be recognized that the only rational therapeutics is to put the patient under conditions that induce a state of relative rest for the kidney. One thinks of the blue swollen kidneys with a circulation impeded by endothelial glomerular proliferation and inflammatory stasis; the patient must have mechanical rest and we put him to bed. But beyond that one judges, by analogy, that during that first crucial week or two the greatest possible decrease in the specific work of the kidney is needed. That means a minimal nitrogen excretion and that can be obtained only by a diet adequate in calories but with as little protein as possible. Drs. Murphy and Rastetter will, I am sure, agree that there is something even more important than the treatment of the initial stage. There is a real hope of prevention because in this disease there are a number of factors all essential for the initiation of the process. It is not only the streptococcus plus some constitutional susceptibility, for I have now seen four pairs of identical twins, that is to say, people with identical constitutional susceptibilities and after streptococcal infections one of each pair comes down with glomerular nephritis, the other escaping. Is there some immunologic peculiarity without which no scarlet fever patient will have nephritis?

DR. FRANCIS D. MURPHY, Milwaukee: I was happy to have my ideas confirmed by Dr. Addis, who has paid so much attention to this type of problem. I believe that, as Dr. Addis pointed out, when the patient is in the chronic stage of nephritis, so little can be done in a general way that the time to treat these patients vigorously is in the earlier stages when a great deal can be done to eradicate the inflammatory lesion entirely.

38. Keutman, E. H., and McCann, W. S.: Dietary Protein in Hemorrhagic Bright's Disease: I. Effects upon the Course of the Disease with Special Reference to Hematuria and Renal Function, *J. Clin. Investigation* 11: 973 (Sept.) 1932.  
39. Stone, W. J.: Bright's Disease and Arterial Hypertension, Philadelphia, W. B. Saunders Company, 1937.

UTERINE MYOMECTOMY

ANALYSIS OF INDICATIONS AND RESULTS  
IN 523 CASES

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In a Hunterian lecture delivered before the Royal College of Surgeons of England, Victor Bonney<sup>1</sup> said: "Since cure without deformity or loss of function must ever be surgery's highest ideal the general proposition that myomectomy is a greater surgical achievement than hysterectomy is incontestable." This statement is particularly true when dealing with myomas during the child-bearing period, whatever this period may be. This designated time is arbitrarily set by some gynecologists as terminating about at the age of 40 years but, obviously, the function exists until after the menopause. The psychologic effect produced by the loss of the power to conceive is too frequently disregarded in the management of uterine myomas. It is, of course, much easier to perform a subtotal hysterectomy but the technical difficulties of myomectomy are minimized by good results obtained among young women to whom the procedure is applicable. The decision as to when it is applicable is the individual responsibility of the surgeon, who must be guided by the age, number of tumors present, the patient's desire for subsequent children, associated pathologic conditions of the adnexa, the possibility of recurrences and the ability of maintaining a serviceable organ.

Myomectomy as a surgical procedure had its origin first in the removal of single pedunculated myomas, and later it became customary to enucleate single myomas from the body of the uterus itself. The good results which attended these procedures have been extended in recent decades by such men as W. J. Mayo,<sup>2</sup> Clark and Norris,<sup>3</sup> Bonney, Giles,<sup>4</sup> Labey,<sup>5</sup> Murray<sup>6</sup> and others, to the point where multiple myomas of all sizes and positions have been removed with conservation of the uterus as a functioning organ. Myomectomy is not regarded favorably by the profession in general except by those men who are not only technically adept in pelvic surgery but also have in mind the effects on the organism of the loss of the physiologic functions of the reproductive mechanism.

The risk of the operation is looked on by some as excessive in comparison with hysterectomy but, from reports in the literature made by capable gynecologists, the risk is essentially the same as for subtotal hysterectomy; namely, from 1 to 2 per cent. The convalescence, especially if multiple tumors are removed, may be more febrile than that following hysterectomy; the febrile reaction ensues from the absorption of blood from the uterus or from the pelvic peritoneum, which

is in no way detrimental. Convalescence following removal of pedunculated tumors is virtually uneventful.

The percentage of recurrence is a variable factor and depends on the completeness of removal of all small seedling tumors. Some are of the opinion that it is not necessary, in the presence of multiple large and small tumors, to remove all of the smallest ones. Nevertheless, if meticulous care is exercised in removing the smallest leiomyoma, the incidence of recurrence should be proportionally reduced. However, when operating in pregnancy for the removal of an obstructing or degenerating myoma, it would not be prudent to remove other insignificant myomas at that particular time; also, as in our own cases, myomectomy occasionally is performed as a secondary procedure incident to an appendectomy or ruptured ectopic pregnancy, excision of endometrial implants, presacral resection and ovarian cysts, in which cases smaller tumors within the myometrium might be overlooked.

We wish to present our observations in 523 cases in which abdominal myomectomies for uterine myomas were performed at the Mayo Clinic between 1925 and 1934 inclusive. During this decade about 3,400 hysterectomies were performed for leiomyoma of the uterus,

TABLE 1.—Age Distribution in Myomectomy (523 Cases), 1925-1934

Age, Years	Number	Per Cent
10-19.....	2	0.4
20-29.....	76	14.5
30-39.....	331	63.3
40-49.....	76	14.5
50-59.....	22	4.2
60-69.....	16	3.1
Mean age.....	36.7 years	
Oldest.....	69 years	
Youngest.....	18 years	

which gives a ratio of about six hysterectomies to each myomectomy; or, myomectomy was performed in about 14 per cent of the total number of cases in which operation was performed for leiomyomas during this period.

It is often stated in discussions of this subject that the late thirties should be the upper limit for patients who are to be subjected to myomectomy. Therefore, for purposes of clarity we have divided our series into groups: those less than 40 years of age and those 40 years of age or older. Of the 523 patients, 409, or 78 per cent, were less than 40 years of age and 114, or 22 per cent, were 40 years of age or older; of the latter group, the presence of leiomyomas was of secondary importance to other indications for operation in 55 per cent of cases.

AGE INCIDENCE

The largest number of myomectomies performed was 330, or 63.3 per cent, in the fourth decade. The oldest patient was 69 years of age and the youngest 18. The average age was 36.7 years. Only thirty-eight patients, or 7.3 per cent, were actually beyond the reproductive period (table 1).

MENSTRUAL HISTORY

The menstrual disturbances conform to the same general rule among those patients treated by myomectomy as for leiomyomas in general. We found that 199 patients, or 38 per cent, had normal menstrual periods. This was particularly true among those patients who had only large pedunculated tumors and in cases in which the myomas were small and usually of secondary importance. Two hundred and sixty-nine patients, or 51.4 per cent, had abnormal periods; that is, 137, or

From the Division of Surgery, the Mayo Clinic.  
Read before the Section on Obstetrics and Gynecology at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 16, 1938.  
1. Bonney, Victor: The Technic and Results of Myomectomy, *Lancet* 1: 171-177 (Jan. 24) 1931.  
2. Mayo, W. J.: Myomas of the Uterus, with Special Reference to Myomectomy, *J. A. M. A.* 68: 887-890 (March 24) 1917.  
3. Clark, J. G., and Norris, C. C.: Conservative Surgery of the Pelvic Organs in Cases of Pelvic Peritonitis and of Uterine Myomata, with the Review of the Immediate and After Results of 299 Cases, *Surg., Gynec. & Obst.* 11: 398-413 (Oct.) 1910.  
4. Giles, A. E.: Indications for and Results of Myomectomy for Uterine Fibroids, *Proc. Roy. Soc. Med. Part 3*, 16: 13-21 (Oct. 5) 1922.  
5. Labey, M., quoted by Goulliaud, M.  
6. Murray, H. L.: Myomectomy: A Record of 154 Consecutive Cases, *Tr. Edinburgh Obst. Soc.* 37: 73-100, 1930.



50.9 per cent, had chiefly menorrhagia and/or metrorrhagia, whereas in 128 cases, or 47.6 per cent, the chief disturbance was dysmenorrhea (table 2). This incidence of pain is somewhat surprising and might lead to the diagnosis of adenomyoma or endometriosis.

#### DESCRIPTION OF TUMOR

The tumors were studied with regard to whether they were single or multiple and with regard to size. We divided them into those 4 cm. or less in diameter and those over 4 cm. in diameter. The importance of the tumor was then noted; that is, whether it was of primary or of secondary consideration.

The occurrence of leiomyomas is almost evenly divided between single and multiple tumors. It is obvious from this that the presence of a single leiomyoma was not the sole indication for myomectomy.

Small tumors are somewhat in excess but 227, or 43.4 per cent, were classed as large tumors or exceeded 4 cm. in diameter (table 3). The excess of tumors less than 4 cm. in diameter is explained on the basis of the primary or secondary importance of the tumor; that is, many of the small tumors whether single or multiple were removed as a secondary procedure in conjunction with other pelvic operations. There were, therefore, 229, or 43.8 per cent, classed as of secondary importance and, in the majority of these, the tumors were less than 4 cm. in diameter. The largest myoma measured 27 cm. and the smallest 2 mm., and the largest number of myomectomies in any one case was fifteen.

One of us (Counsellor) has called attention to the importance of the situation of the myoma in relation to the uterus in selecting the type of surgical treatment in the management of uterine myomas. This is of particular importance in the consideration of myomectomy. In this connection, myomectomy holds a favorable position, because the majority of myomas are situated in the body of the uterus, usually on the anterior or the posterior wall. They are usually designated as subserous, interstitial or submucous according to whether they are under the peritoneum, embedded in the wall of the uterus or under the mucosa. It was previously considered a greater risk to penetrate the uterine cavity than not to do so in performing a myomectomy but,

TABLE 2.—Menstrual History in Myomectomy (523 Cases), 1925-1934

Group	Number	Per Cent
Normal.....	199	38.0
Abnormal.....	269	51.4
Menorrhagia and/or metrorrhagia, chiefly..	137	50.9
Dysmenorrhea.....	128	47.6
Irregularity.....	4	1.5
Menopause.....	39	7.5
Not stated.....	16	3.1

if myomas are situated in the submucous position, it is frequently of distinct advantage to be able to control bleeding and to locate additional small tumors similarly placed which, if not removed, might reasonably produce an early recurrence of symptoms. Opening the uterine cavity in performing an abdominal myomectomy is distinctly contraindicated wherever there is a pedunculated submucous leiomyoma which has become partially extruded through the cervix because, in the majority of such cases, there is an associated endometritis.

It was not possible to give the specific site with respect to the uterus in this series because this information was not contained in a sufficient number of the operative records to be of value; however, 473, or 90.4

per cent, were situated in the fundus exclusive of thirty-two, or 6.1 per cent, which were situated in the horn of the uterus and a few each in the broad and round ligaments and in the cervix. A great many of the tumors were on the anterior wall, interfering with distention of the bladder, but in only eleven instances, or 2.2 per cent, was there any evidence of important vesical dysfunction.

In this connection, it is important to state that when a myoma is encountered on the anterior surface of the uterus and the wall of the bladder is attached to the

TABLE 3.—The Tumors in Myomectomy (523 Cases), 1925-1934

Group	Total Number	Total Per Cent
Number of tumors		
Single.....	268	51.2
Multiple.....	255	48.8
Size of tumors		
4 cm. or less.....	280	53.5
Over 4 cm.....	227	43.4
Not stated.....	16	3.1
Importance of tumor		
Primary.....	294	56.2
Secondary.....	229	43.8

myoma, it is occasionally better operative technic to resect that segment of the bladder which is attached to the tumor rather than produce any excessive interference with the blood supply of that segment of the bladder because, when the blood supply of any segment of the bladder is disturbed, a secondary and persistent interstitial cystitis may be a complicating sequela.

When myomas are situated in a horn of the uterus, as obtained in 6.1 per cent of our cases, the function of the fallopian tube on that side may be destroyed or at least seriously interfered with. In cases in which this situation is obvious, it is usually safer to remove the tube and, as a protective measure, to utilize the round ligament in covering the defect in the uterus. Also myomas which extend from the lateral wall toward the broad ligaments are usually pedunculated and their removal is usually complicated by the position of the ureter and the uterine vessels. In enucleating such tumors we have found it of distinct advantage to open the anterior sheath of the broad ligament near the pedicle of the tumor and visualize these structures. The ureter usually will be situated posteriorly and can be seen as the tumor is rotated anteriorly, and then the ureter can be carefully protected. If the ureter is anterior, it can be mobilized and retracted out of harm's way with gauze tape.

When the uterine arterics and veins are intimately attached to the pedicle, these structures can be safely ligated on that side without any subsequent complications, provided the blood supply on the opposite side is intact.

If tumors are situated in the posterior wall of the uterus and are not pedunculated, it is much wiser, as Murray points out, to enucleate these tumors through an incision in the anterior wall directly through the uterine cavity so as to obviate the necessity of an incision on the posterior wall to which the bowel might subsequently become adherent and produce intestinal obstruction. Through such a maneuver, the myometrium is more favorably conserved. It should be stated, therefore, for the same reason that whenever myomectomy is performed it should be through the anterior surface of the uterus or through the anterior sheath of the broad ligament. In some situations this is not feasible, and then it is extremely important to have the surface as

smooth as possible. We feel, however, that the incidence of intestinal obstruction following myomectomy has been overestimated and is of less importance if the omentum is utilized to the best advantage at the conclusion of the operation.

#### ASSOCIATED OVARIAN DISEASE

In less than half of all the cases, 47.4 per cent, there was positive evidence of ovarian disease other than malignancy. In 19.7 per cent all evidence of ovarian disease was lacking, whereas in 32.9 per cent the records did not contain any statement to specify the presence or absence of it; but this is presumptive evidence that ovarian disease did not exist, at least to the extent of requiring treatment. If one permits such an interpretation concerning the latter group, 52.6 per cent of the cases were not associated with ovarian disease. This would conform to the usually accepted fact that ovarian disease is associated with uterine myomas in approximately 50 per cent of the cases. If myomectomy is the procedure of choice, conservative operations on the adnexa are decidedly indicated especially if the two adnexa are similarly involved. A unilateral salpingo-oophorectomy is often necessary but still is considered a conservative operation. We have encountered patients who had repeated pregnancies occur subsequent to the removal of one fallopian tube and the opposite ovary. The same experience has followed the removal of one tube and bilateral resection of the ovaries, in which case only a small segment of normal ovarian tissue remained on each side. In this series, conservative operations were performed on the adnexa in 206 cases; in 300 cases, operation was not required. Also there is an occasional instance in which there is a large degenerating or rapidly growing myoma in an atrophic uterus, in which case it is safer to remove the myoma than to submit the patient to hysterectomy. Such is encountered among elderly patients who are poor surgical risks. The time element in the operation is an important factor. There were three such instances in this

TABLE 4.—Patients Pregnant at Myomectomy (Twenty-Two \* Among 523 Operated on), 1925-1934

	Number	Per Cent
Miscarriage.....	7	31.8
No miscarriage.....	15	68.2
Normal birth.....	11	73.2
Cesarean section at term.....	1	6.7
Stillbirth at term.....	1	6.7
Forceps at term (hydrocephalic child).....	1	6.7
Premature birth.....	1	6.7
Total.....	22	100

\* This does not include seven cases of ectopic pregnancy and four cases in which cesarean section was performed coincidentally with myomectomy, which would bring the total to thirty-three.

series in which radical removal of both adnexa was performed for associated disease among patients more than 40 years of age, in which cases myomectomy was the primary procedure. Furthermore, there were fourteen instances in which myomectomy was done as a secondary procedure; both adnexa had been removed as the primary operation. Six of these patients were less than 40 years of age and eight were more than 40 years of age. In each case the general condition contraindicated radical hysterectomy.

#### MYOMECTOMY DURING PREGNANCY

Myomas associated with pregnancy do not necessarily call for surgical treatment. It is the belief of some

(Bonney, Danforth,<sup>7</sup> Lynch,<sup>8</sup> Polak<sup>9</sup> and Giles) that myomectomy is inadvisable in pregnancy unless the case is very exceptional. These exceptional cases consist of red degeneration or necrobiosis, rapid increase of size of the myomas, and situation of the tumor so as almost certainly to obstruct delivery. Some authors feel that, even in the face of some of these indications, it is better to attempt to carry the patient to term and to treat emergencies as they arise.

We have, in our series, a total of thirty-three cases in which myomectomy was performed in pregnancy.

TABLE 5.—Recurrence of Leiomyomas in 523 Cases After Myomectomy, 1925-1934

Group	Total		Age			
			Less than 40		40 and Over	
	Num-ber	Per Cent	Num-ber	Per Cent	Num-ber	Per Cent
Negative.....	244	47.2	160	46.0	84	48.2
Positive—proved.....	26	5.0	25	6.2	1	0.9
Positive—not proved..	85	16.5	76	18.8	9	8.0
Unknown.....	162	31.3	114	28.1	48	42.9
Total.....	517*	100	405	100	112	100

\* Excludes six postoperative deaths.

Seven of these were ectopic pregnancies, and in four cesarean section was performed coincidentally with myomectomy. By excluding these eleven cases there remain twenty-two cases of intra-uterine pregnancy in which myomectomy was performed. In three instances a very early pregnancy was not known to exist. In thirteen there were serious symptoms of degeneration or necrosis, and in three the tumor and uterus were impacted in the pelvis.

Seven, or 31.8 per cent, of the patients had a miscarriage postoperatively. Fifteen, or 68.2 per cent, did not have a miscarriage. Among these fifteen eleven, or 73.2 per cent, had normal births. There was one case each of cesarean section at term, stillbirth at term, forceps delivery and premature birth, an incidence of 6.7 per cent each (table 4). The figures given by most authors are in accordance with this. Brindeau<sup>10</sup> found that 76 per cent did not have a miscarriage and Gemmell<sup>11</sup> stated that 80 per cent had normal children.

#### RESULTS OF MYOMECTOMY

In evaluating the results of myomectomy it is necessary to consider whether or not the individual has been relieved of the condition for which she sought treatment, the question of recurrence and subsequent surgical procedures that are necessary to effect relief, and the effect of the disease and treatment on subsequent fertility.

These results were computed three or more years after operation. Among the 523 patients there were six deaths, or 1.2 per cent. Of the remaining 517 patients 244, or 47.2 per cent, were cured. There were 111 cases in which recurrences developed. In twenty-six of these cases, recurrence of leiomyomas was proved at subsequent operation here or elsewhere; in eighty-five the diagnosis of recurrent leiomyomas was made after pelvic examination here or elsewhere. The results could not be ascertained in 162, or 31.3 per cent.

7. Danforth, W. C.: The Treatment of Fibroids, *Am. J. Obst. & Gynec.* 28: 409-420 (Sept.) 1934.

8. Lynch, F. W.: Uterine Fibromyoma: Review of 693 Cases, *J. A. M. A.* 94: 156-162 (Jan. 18) 1930.

9. Polak, J. O.: The Influence of Fibroids on Pregnancy and Labor, *Surge, Gynec. & Obst.* 16: 21-29 (Jan.) 1928.

10. Brindeau, A.: La myomectomie dans ses rapports avec la grossesse, *Gynec. et obst.* 20: 255-271 (Oct.) 1929.

11. Gemmell, A. A.: Abdominal Myomectomy, *J. Obst. & Gynaec. Brit. Emp.* 42: 715-748 (Aug.) 1936.

Of these 517 patients 405 were less than 40 years of age and 112 were 40 years of age or older. Of the 405 who were less than 40 years of age, 25 per cent gave evidence of recurrence of tumors, whereas in only 8.9 per cent of those older than 40 years of age was there evidence of recurrence (table 5). The incidence of recurrence in this series, which is more than 20 per cent, is exceptionally high in comparison with the figures given by Gemmell, who summarized the world litera-

TABLE 6.—Treatment Subsequent to Myomectomy (523 Cases), 1925-1934

Treatment	Number	Per Cent
Subsequent pelvic surgery.....	58	11.1
Hysterectomy.....	43	74.2
Other surgery.....	15	25.8
Other treatment for bleeding.....	39	7.5
Radium.....	9	23.1
Roentgen.....	6	15.4
Miscellaneous.....	24	61.5
No subsequent treatment.....	243	46.2
Deaths postoperatively.....	6	1.2
No information.....	177	33.8
Total.....	523	100

ture in this connection and found that the incidence of recurrence varied from 0 to 14.28 per cent whereas the probable average is approximately 4 to 8 per cent.

Our incidence of recurrence is amply explained by the fact that in 229 cases, or 43.8 per cent, myomectomy was a secondary procedure and, therefore, complete removal of all tiny leiomyomas which would be necessary to reduce the incidence of recurrence was not performed in every instance.

Not all patients who had evidence of recurrence submitted themselves for subsequent treatment. However, ninety-seven of this group of 111 had some form of subsequent treatment, as shown in table 6. Forty-three were subjected to subsequent hysterectomy, although in only twenty-one was it positively known that myomas were the primary reason for hysterectomy. Nine of the recurring myomas were treated by radium therapy and six by roentgen therapy. In twenty-four cases, subsequent medical treatment of one type or another was administered for menstrual disturbances.

#### FERTILITY

The incidence of fertility was determined on all patients with the exception of eight in whom the information was not available prior to operation. There were 135 who were unmarried, whereas 388 were married. Of the 388 married women 238, or 61.3 per cent, had been pregnant. Of the 238 women who had been pregnant there were 152 who gave birth to living infants, or 63.9 per cent. Sixty-four, or 26.9 per cent, had experienced only miscarriages, which is presumptive evidence that the leiomyomas were an etiologic factor in the miscarriages. Twenty-two, or 9.2 per cent, were pregnant for the first time when the myomectomy was performed (table 7). There were no pregnancies in 142 cases, an incidence of sterility of 36.6 per cent of the total married group.

Subsequent to myomectomy, sixty-eight of the 409 patients less than 40 years of age at the time of myomectomy became pregnant and bore a total of eighty-four babies, four of which were born by cesarean section and eighty by natural birth.

This figure is further enhanced by the following observations: Six patients were known to be dead at the time of this study, thirty-one were sterilized at operation or within three years after operation; ninety-five were still unmarried; eighty-one of those married

were not heard from with respect to subsequent pregnancy. The postoperative fertility is, therefore, more reasonably calculated on the basis of 196 patients less than 40 years of age, for whom pregnancy could be expected. Of these, sixty-eight became pregnant, an incidence of 34.7 per cent. Finally, if it is assumed that the eighty-one patients whom we could not trace as to pregnancy actually did not become pregnant, the incidence would be reduced to 24.5 per cent, which parallels that given by other authors. Murray quoted the figure 27.3 per cent, Riley<sup>12</sup> 18 per cent, Gemmell 27 per cent and Goulliaud<sup>13</sup> 25 per cent less than 40 years of age. Bonney, however, stated that 39 per cent of patients within the child-bearing age may be expected to conceive following myomectomy.

#### SUMMARY AND CONCLUSIONS

Observations in 523 cases in which abdominal myomectomy was performed for uterine myomas, between 1925 and 1934 inclusive, revealed a mortality of 1.14 per cent.

During this period about 3,400 hysterectomies were performed for leiomyomas, giving a ratio of about six hysterectomies to each myomectomy, or about 14 per cent.

There were 294 patients who experienced myomectomy as the primary operation and 229 who were subjected to myomectomy as a secondary procedure.

The operations were performed in each instance as conservative methods to maintain as far as possible the reproductive and menstrual functions. In a few instances, among patients beyond the reproductive period, the adnexa were removed, myomectomy being performed as a secondary procedure; 63.3 per cent of the patients were in the fourth decade of life and the average age of all patients was 36.7 years.

The menstrual periods may be normal among patients who are candidates for myomectomy. In this series the periods were normal in 38 per cent of the cases. Dysmenorrhea was a prominent symptom in 47.4 per cent of the patients who had abnormal menstrual periods.

The situation of the tumor with respect to the uterus is an important factor in performing myomectomy. That is, as far as possible, all myomas should be enu-

TABLE 7.—Fertility in 523 Cases in Which Myomectomy was Performed, 1925-1934

Group	Number	Per Cent
Unmarried.....	135	25.8
Married.....	388	74.2
Pregnancy.....	238	61.3
Living births.....	152	63.9
Miscarriages only.....	64	26.9
First pregnancy at time of operation....	22	9.2
No pregnancy.....	142	36.6
No information.....	8	2.1

cleated through the anterior surface of the uterus or through the anterior leaf of the broad ligament so as to minimize the risk of later intestinal obstruction.

Ovarian disease was associated in approximately the same number of cases as that seen in performing hysterectomy for leiomyomas in general. In this series it was 47.4 per cent.

Myomectomy in pregnancy is indicated only in exceptional instances. There were twenty-two cases of intra-uterine pregnancy in which myomectomy was performed. Of these, 31.8 per cent of the patients had a miscarriage

12. Riley, F. R.: Myomectomy in Uterine Fibroids, New Zealand M. J. 27: 68-77 (April) 1928.  
13. Goulliaud, M.: Dix-huit cas de grossesse après la myomectomie abdominale, Bull. et mém. Soc. nat. de chir. 54: 691-699 (May 9) 1928.

postoperatively. Of those who did not have a miscarriage, 73.2 per cent had normal births; there was only one case in which cesarean section was performed. Myomectomy, therefore, is not to be regarded as too important a factor in subsequent delivery.

The recurrence of leiomyomas in this series was approximately 20 per cent, which is somewhat higher than that currently reported but is accounted for by the fact that 229 of the myomectomies were secondary procedures. It is of importance that 25 per cent of those less than 40 years of age were known to have recurrences, as contrasted with 8.9 per cent more than 40 years of age. Of the group of 111 who had recurrences, only twenty-six required subsequent surgical treatment.

The incidence of fertility was determined for all patients with the exception of eight, or 2.1 per cent, regarding whom the information was not available prior to operation. This incidence was 61.3 per cent, but 26.9 per cent of the fertile patients had experienced only miscarriages.

Subsequent to myomectomy, sixty-eight of the 409 patients who were less than 40 years of age at the time that myomectomy was performed became pregnant and bore a total of eighty-four babies. The postoperative fertility was accurately determined for 196 patients less than 40 years of age among whom pregnancy could reasonably be studied, which gives an incidence of 34.7 per cent postoperative fertility. In the presence of a postoperative incidence of fertility of 34.7 per cent, myomectomy should certainly be regarded as a favorable procedure during the reproductive period, especially when the mortality is not higher than that associated with radical procedures.

#### ABSTRACT OF DISCUSSION

DR. FRANK W. LYNCH, San Francisco: There is no doubt that myomectomy is not a popular operation and, from the standpoint of modern surgery, that its unpopularity is undeserved. The literature of twenty-five or thirty years ago showed a surgical mortality rate at least twice as much as for hysterectomy. The feeling that the mortality rates are the same lingers still in the minds of many who practice surgery. There are definite reasons why myomectomy was a more hazardous procedure than supravaginal hysterectomy. Uterine muscle that surrounds a growing fibroid hypertrophies just as a pregnant uterus does and involutes later in the same manner, even though in lesser degree. Such tissue does not heal as rapidly as the resting type. The blood vessels nourishing the fibroid are also thin walled, and bleeding is not readily controlled except with some mass ligation. Yet these obstacles to proper wound healing can be readily overcome by proper technic. In the past, the uterine incision was usually closed with through and through sutures, which were often tied too tight, as A. J. Ochsner showed. Nor was there any attempt at proper peritonization. Rough knots of coarse silk or catgut invited dense adhesions, and some degree of intestinal obstruction was not unusual if the case was observed long. With a modern operative technic, all bleeding points are ligated before the uterine incision is closed in layers. Opening the uterine cavity is a matter of little importance if there is proper technic, as the authors have shown. Proper peritonization is vital to a successful operation. There should be no rows of knots of interrupted sutures visible on the uterine incision. A proper closure can be made with only one knot which shows. Aids to peritonization are grafts of omentum or proper utilization of the peritoneal surfaces of the round ligaments pulled back as a Webster cover. With such a technic the patient has little risk. My experience agrees closely with that of the authors, although my series is much smaller. In a series of 1,045 fibroids treated surgically, 42 per cent had supravaginal hysterectomies,

20 per cent panhysterectomies and 18 per cent myomectomies. The surgical mortality rate for the 855 hysterectomies was 0.95 per cent and for the 190 myomectomies it was 0.5 per cent. Forty-one per cent of my patients had tumors larger than 4 cm. Other fibroids have developed requiring subsequent operation in a few. All these women originally had many small tumors. There are no known recurrences in patients whose single tumor was large and deeply embedded in the uterine muscle.

#### PUBLIC HEALTH ASPECTS OF INDUSTRIAL HYGIENE

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"In recent years," wrote Sir George Newman,<sup>1</sup> "we have learned that public health is not only a matter of the postponing of mortality and the prevention of sickness, but of the positive side of health—the increase of vitality, capacity, and efficiency of the human body. Our aim is not only to oppose diseases but to advance and develop physical fitness and well being. To secure this end, we must have regard to the whole life of man—his heredity and upbringing, his work and rest, his food, his habits, his environment. We must pay attention not only to his actual ailments and diseases, but to the conditions making for a maximum degree of personal health. Thus it comes about that a new relation is found to exist between occupation and health. In a word, the health of the industrial worker forms an integral and inseparable part of the health of the community."

This broad concept of industrial hygiene was enunciated nearly two decades ago and like all fundamental statements is applicable today. Yet, if stock is taken of what has been accomplished in this country during the past twenty years and especially of present practices in this field of public health, it is realized that emphasis has been placed on the control of industrial accidents and occupational diseases. It is not intended to underestimate the importance of accidents and occupational diseases but rather to call attention to the opportunity offered and at the same time to provide assistance to the groups served in the solution of other health problems which are equally, if not more, important. Since industrial health is so closely interwoven with community health, each component part of a broader program is certain to support the other. An analysis of the health problems affecting all wage earners and the present day activities in the field of industrial hygiene will serve to indicate more clearly what may and should be accomplished in the immediate future.

#### SCOPE OF THE PROBLEM

Industrial hygiene is the science of the preservation of the health of workers. It therefore involves primarily a program for conservation of health and prevention of accidents and occupational disease. Such a program necessarily extends beyond prevention of accidents and occupational diseases; it includes also the broad subject of the health of the worker. It is obvious that some of

Read before the Section on Preventive and Industrial Medicine and Public Health at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 15, 1938.

1. Newman, George: Part of Introduction to Collis, E. L., and Greenwood, Major: The Health of the Industrial Worker, Philadelphia, P. Blakiston's Son & Co., 1921.

the problems arise from the nature of the industrial environment itself; namely, the control of poisons, dusts, excessive temperature and humidity, defective lighting, noise, overcrowding and general plant sanitation. Some of them obviously involve such factors as hours of work, fatigue, communicable diseases in the factory, mental health and personal hygiene.

In the past, industrial hygienists have concentrated their efforts in the main on a rather limited portion of the industrial population; namely, the fifteen million workers employed in manufacturing and in mechanical and mineral industries. Although it is true that the greater number of occupational diseases develop among employees in these groups, some of the ten million employed in agriculture and the four million employed in transportation and communication and others should be considered in an industrial hygiene program, for all have health problems which are deserving of attention.

Frequently, workers in establishments hiring large groups in all classes of employment are provided some health services. However, the fact that a large number of workers are employed in small establishments which have no practical means of providing adequate attention to health calls for the cooperation of all interested in the promotion of an effective industrial health program. Of a total of more than eight million persons employed in manufacturing plants, about one half are found working in establishments with less than 250 workers. The obstacles associated with the development of a complete health service for employees in these small units are not unsurmountable if the problem is approached in a cooperative spirit. This means increased activity on the part of all professions and agencies interested in health preservation and that the plans and interests of all need to be correlated. While public health officials may assist most in the administrative and educational phases of the work, the success of their efforts—as in other fields of public health—is dependent on the close cooperation and aid of the group served and the members of organized medicine in the community.

While insufficient data have thus far prevented recognition of some health problems peculiar to wage earners, there is ample evidence to indicate that morbidity and mortality rates are higher for some groups than for all gainfully employed persons or the adult population generally. These excessive rates are especially notable for unskilled workers, for whom the death rate from all causes in certain states was found to be 100 per cent in excess of the death rate for agricultural workers. Studies conducted in specific industries have shown the incidence of such diseases as tuberculosis, pneumonia and degenerative conditions to be higher than the average for the entire industrial population. There is evidence to justify the opinion that deaths from tuberculosis can be reduced 50 per cent by health supervision of workers in occupations predisposing to the disease, by detection of minimal cases and by provision of adequate medical and institutional care in the early stages of the disease. A large amount of information testifies that in a majority of cases the disease is discovered too late in its course for the most effective treatment. It is also known that mortality and disability from pneumonia are excessive among workers exposed to extreme and sudden changes in temperature, inclement weather, toxic gases and dusts.

In view of the means by which the health of the workers can be improved, the problem is complex. First, from the layman's point of view—because the

relationship between cause and effect is more readily discernible—the disability and lost time due to industrial accidents and diseases seem most important. Although great advance has been made in the prevention of industrial accidents during the past twenty years, this form of injury continues to be a major health problem. Incidentally, the industrial hygienist is usually more conscious than others of the part played by ill health as a contributory cause of many of these accidents. According to the last report of the National Safety Council,<sup>2</sup> there were 19,000 occupational deaths in 1937. Studies indicate also that minimum rates have not been approached, since the records for accidents in the steel companies with the best practices show a rate far lower than that for the industry as a whole.<sup>3</sup> Second, it is well known that certain occupations, not necessarily the so-called dangerous trades, are associated with poisoning, disease and high mortality. Third, some workers lack the physical capacity to undertake certain types of work. Fourth, absenteeism due to what may be termed general diseases affecting adults is far too high. While accidents, occupational diseases and high occupational death rates are impressive, there is no doubt that the least dramatic side of the problem—the lost time and incapacity due to illness—is a fact of most importance. Here there is a vast amount of wasted energy and life due in the main to preventable illnesses, some of which may be contributed to by the working environment. Although significant progress has been made in the control of certain communicable diseases, as is evidenced by the declining trend of the death rate in the last forty years, one must not lose sight of the fact that this saving of life has taken place chiefly in childhood and in the years of early adult life. No significant increase occurred during this period in the average years of life remaining to persons of middle and advanced age. The death rates from some important diseases of adult life have been increasing, a phenomenon understandable in the light of the fact that the principal causes of death operating in the advanced years are primarily chronic. Preliminary data from the national health survey, based on surveyed persons of all ages, show that chronic diseases, including permanent impairments, alone account for six of the ten days of incapacity from illness and accidents experienced by the average person per year, and with respect to sickness and accidents, data to be published by the Division of Industrial Hygiene show in the instance of a public utility that on the average 7.5 days were lost annually by men and 10.9 by women.<sup>4</sup>

All these facts have an important bearing on the industrial health problem, since an adult population is involved. The health problems peculiar to workers as a group may be effectively solved by the application of those public health methods which have operated so successfully in the control of specific illnesses affecting other units of the population. In the control of communicable diseases which affect primarily infants and school children, the administrative, educational and professional program has been designed to meet the particular needs. The school authorities, parent-teacher associations and other community groups with the medical profession have cooperated with state and local health agencies in the control of such diseases.

2. Accident Facts, preliminary 1938 edition, Chicago, National Safety Council, 1938.

3. Accident Experience in the Iron and Steel Industry to the End of 1932, Monthly Labor Review 37: 566-581 (Sept.) 1933.

4. Preliminary Reports, the National Health Survey: Bull. 1, Sickness and Medical Care Series, U. S. Public Health Service, Washington, D. C., 1938.



Public health action may in a like manner be brought to bear on problems affecting the health of the worker, since closely associated industrial groups will provide similarly essential and highly important group contacts.

#### PRESENT TRENDS IN INDUSTRIAL HYGIENE

Government responsibility for safeguarding health rests chiefly with the state and local health departments. The activities of federal agencies engaged primarily in the field of industrial hygiene are established for the purpose of collecting and disseminating information, conducting field and laboratory investigations and protecting the health of federal employees. Prior to 1936 most states had concerned themselves chiefly with matters of safety, sanitation, employment of women and children and compensation of employees following disabling accidents. All but two states have workmen's compensation legislation for accidental injuries, and today twenty-one states provide compensation for one or more occupational diseases. Administratively, the states have placed enforcement of occupational disease legislation in various departments.

During the past two years the United States Public Health Service has, on request, through the Division of Industrial Hygiene, assisted in the development of this field in state and local health departments. Progress has been stimulated in part by funds allotted to the various states for public health activities by the provisions of the Social Security Act. Today there are twenty-three states and four municipal departments of health that have taken steps to provide industrial health services;<sup>3</sup> but it must be remembered that these units have been recently established and will not be in a position to render complete or adequate service to industry and labor and the medical profession until they have greatly increased financial support and trained personnel.

At present the industrial hygiene divisions in the states and cities are confining their work chiefly to the evaluation and control of occupational diseases in industry. Occupational diseases have for some time been receiving unusual attention. The reason for the "occupational disease" approach to industrial health problems is logical. First, the relationship between a specific occupational disease and environment is frequently tangible, and the benefits of control practice are evident. Second, the manner in which some diseases have developed in specific industries has been such as to favor dramatization, which in turn has served to make interested groups more conscious of the importance of occupational disease and the need of providing benefits for workers suffering from such illnesses, as in the case of injuries due to industrial accidents.

The thought might bear repetition here that industrial hygiene is essentially adult health maintenance among the gainfully employed and necessarily runs the entire gamut of public health for these persons. Nationwide data to support this view are being collected and analyzed. It is hoped that there will be some basic statistics on the subject of illness and death by occupation in this country as soon as the Public Health Service has had an opportunity to analyze the results of its recent inquiry on more than a half million workers. Limited statistics for the prevalence of occupational diseases are available for a few states. In Wisconsin, where a workmen's compensation law has been in operation longer than in any other state, some recent unpublished data furnished by Dr. William M. Gafaer of this

division bear examination. For the sixteen year period from 1920 to 1935, occupational diseases accounted for 2 per cent of the total cases of compensation. During 1935 this percentage increased to 2.8. During the same sixteen year period 2.8 per cent of the total costs for all injuries was due to occupational diseases, but during 1935 the corresponding percentage increased to 7.1. The compensation cases settled in 1935 represented a loss of over two million working days, and of these days lost 8 per cent were accounted for by occupational diseases. In other words, although the incidence and the costs of occupational diseases are rising, occupational diseases account for but a small percentage of the total compensation cases and costs in the state of Wisconsin. Reports from other states, for example New York, New Jersey and Ohio, show a similar trend. According to the United States Department of Labor, the total direct and indirect costs of industrial injuries in this country are approximately 5 billion dollars annually, and of this amount but a small percentage is accounted for by occupational diseases.

On the other hand, studies made by the American College of Surgeons indicate that illness causes at least fifteen times as much absenteeism as do industrial injuries.<sup>6</sup> For women lost time from sickness in certain companies has been found to be as much as forty times the number of days lost from work on account of industrial accidents.<sup>7</sup> Although we have no comparable statistics to show the costs in this country for the so-called general illnesses in the industrial population, individual studies do show that were such information available it would definitely indicate that these costs are far in excess of expenditures due to occupational disease and accidents. Data cited by the Committee on the Costs of Medical Care indicate an expenditure of approximately 10 billion dollars annually due to illness.<sup>8</sup>

It would seem, therefore, that if the general health of a most important and numerous group in the population is to be improved it will be necessary not only to control unhealthful conditions in the working environment but also to give consideration to such factors as proper living conditions, elimination of strain and hurry, nutrition and communicable diseases; in fact, to a general adult health program for workers. A broad industrial health program of this character to progress satisfactorily must be closely interwoven with existing public health activities.

#### A SUGGESTED PROGRAM

Health officials increasingly emphasize the industrial phase of public health, because any active program among industrial workers will improve the general health in the state. The following method of approach in industrial hygiene, recommended by the Public Health Service, has been undertaken by various states.

The scope and nature of the problems in the state may be established in several ways. If it was possible to obtain statistics for industrial morbidity and mortality as well as for the prevalence of occupational diseases and accidents, there would exist a basis for defining the program. However, such statistics are unavailable except for some accidents, for occupational diseases in a few states and for illness in plants having sick benefit associations. For this reason it has been suggested to

6. Newquist, M. N.: *Medical Service in Industry and Workmen's Compensation Laws*, Chicago, American College of Surgeons, 1938.

7. Brundage, D. K.: *An Estimate of the Monetary Value to Industry of Plant Medical and Safety Services*, Pub. Health Rep. 51:1145 (Aug. 21) 1936.

8. Falk, I. S.; Rosem, C. Rufus, and Ring, Martha D.: *The Costs of Medical Care*, Pub. 27, Committee on the Costs of Medical Care, Chicago, University of Chicago Press, 1933.

3. There are two divisions of industrial hygiene in state departments of labor.

the various states that they conduct preliminary surveys of representative samples of work places in an effort to obtain information on the potential occupational diseases and health services. The data on health services in particular should prove useful so far as the survey calls for information concerning the keeping of adequate sickness and accident records.

Once the potentialities for occupational diseases have been established by means of this preliminary survey, the industrial hygiene personnel are in a position to select industries for detailed study in an attempt to evaluate each exposure and the means of its control. When studies are completed it should be possible to make definite recommendations for the control of existing or potential health hazards.

By a cooperative program with industrial officials and local physicians, arrangements may be effected for securing reports of occupational diseases and, more important, for investigating the cases so that the cause of the disease may be determined and efforts made to prevent its recurrence. From the preliminary survey, data should be available concerning the extent to which absence due to illness is recorded, and arrangements should be made with establishments to secure uniform reporting of such absences to the state department of health, so that excessive sickness rates by occupation and disease may be determined and means taken for their elimination.

In carrying out these provisions the work should be done cooperatively, and, in addition to furnishing services to physicians, industry and labor, the industrial hygiene unit should be a source of information for other state agencies and the general public. The value of an educational program to acquaint physicians, industrialists, workers and various groups as to the importance of the problem cannot be overemphasized.

At the present time most state industrial hygiene units employ a very small personnel, usually a physician, an engineer, a chemist and a secretary. Even if this number of persons was doubled one could hope for only a limited improvement in the health of all the gainfully employed persons in the state unless all the resources of the health department could be drafted. This is a perfectly legitimate view of the problem, considering the method of approach which may be employed. For example, no one would dispute the fact that many of the diseases of childhood are not directly associated with the school environment; yet, this fact has not deterred health departments and physicians from doing their most effective work in the prevention of childhood diseases through the medium of the school. The same procedure may be attempted in combating adult diseases by approaching the problem through the medium of the factory. For example, the Southern health officer may feel that with the limited number of so-called industrial workers in his state, industrial hygiene activities are not justified. Yet there is no reason why the same health department cannot carry on a program dealing with nutrition, venereal disease, tuberculosis or malaria control through the industrial groups. By so doing it will be practicing effectively the promotion of public health among a large number of people. At present such programs employ the home as a means of contact. It would seem that the approach of bringing public health to the factory should commend itself from the point of view of efficiency alone.

Many health departments have limited the scope of their activities. Most of them are concerned first and

foremost with the control of communicable diseases. This is as it should be, since the primary function of a health department is such control. There is ample justification for widening the scope of health work in a county, district or city to include the prevention of chronic diseases, as the national health survey has shown that chronic disease and permanent impairments alone account for six of the ten days of incapacity from illness and accidents experienced by the average person in a year.

It is desired to stress the fact that in order to carry on any kind of public health work in the factory it is necessary that the personnel know industry and industrial processes, and for this reason the persons expected to guide the work most successfully are those particularly trained in the field of industrial hygiene. As indicated earlier, a large portion of gainfully employed persons who work in small establishments have not as yet been provided a satisfactory industrial health service. The responsibility of the family physician in this phase of the problem must not be overlooked. There must be a closer cooperation between the industrial hygiene personnel in a state health department, the various local public health units and all medical practitioners, in an attempt to bring public health to gainfully employed persons and indirectly to their families.

The situation as regards industrial health constitutes a challenge which the physician ethically and morally, regardless of the particular field in medicine which he has elected to follow, cannot and should not seek to escape. He may assume leadership now with faith in his ability to serve effectively through the promotion of a cooperative and not a competitive broad health program.

#### ABSTRACT OF DISCUSSION

DR. L. D. BRISTOL, New York: There are a few points which I might emphasize in this brief discussion. First, I like the authors' emphasis on and definition of the scope of industrial health, that it must in the future involve not only occupational disease control but also the promotion of health and the prevention of disease in general among the working population. The health program of the small industry of course needs to be emphasized. Most of the larger companies are doing a fairly satisfactory job now in this field of employee health. As the authors have indicated, the program of the smaller industries might to a certain extent be developed under public leadership, through various divisions of industrial hygiene in state departments of health. They wisely emphasized, I believe, the problem of tuberculosis in industry. Tuberculosis control has been approached through the home, the school and early childhood. If further advance is to be made, the next steps in tuberculosis control must be among employed groups. The whole case finding campaign in industry should be developed as it has been throughout public groups. The U. S. Public Health Service is to be complimented on the work which it has been doing during the last two or three years in helping to develop bureaus of industrial hygiene in various states and making possible the training of personnel with the small funds available.

DR. H. W. GIBBONS, Sacramento, Calif.: We have listened with interest to papers describing the growing efficiency of industrial medicine. Right now, the economics of industrial medicine is important. How are employees of industry who are injured or diseased outside of working hours going to be financed? By government or by private enterprise? As medical director of an insurance company, I am interested in this aspect. Many insurance companies are now issuing group insurance to employees of industrial plants, which covers nonoccupational disease and accident, hospitalization, surgical benefits and life. Sickness and accident insurance for employees disabled in the course of employment is taken care of by state industrial acci-

dent and illness laws and we are agreed that these are developing satisfactorily, but there is an economic stress among this class when the disability is not covered by compensation insurance. Private companies are experimenting with this form of insurance. In theory it works beautifully. One can determine the number of days men have been laid off and the time spent in hospitals and thus establish a satisfactory premium, but, in practice, is the same ratio going to maintain under insurance as it did when the patients had to pay their own way? Will this factor induce the insured to prolong the indemnity period? Will the doctors who treat industrial cases cooperate with insurance carriers in submitting reports and in sending an employee back to work when he is able to work, or will they aid him in claiming all the traffic will bear just because he carries a policy? I should like to suggest that, if the profession and the workers will cooperate, private insurance companies can carry such insurance successfully for a small premium which can easily be borne by the worker and the industry. If, on the other hand, the workers are going to seek more than is their due and physicians are going to help them in that, any plan of insurance will break down. The advance in efficiency of health control in industry coupled with the development of adequate insurance through small contributions is a beautiful plan to contemplate. With the cooperation of all concerned, it will work and there will be no necessity for the government to step in with socialized medicine with the attendant regimentation of our profession.

## BLOOD CALCIUM, PHOSPHORUS AND PHOSPHATASE IN URINARY LITHIASIS

### PARATHYROID DISEASE AS AN ETIOLOGIC FACTOR

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Extensive study of the etiology of urinary lithiasis by numerous workers has failed to produce a factor which can be considered as primary in all cases of stone formation in the urinary tract. However, much knowledge has been gained regarding predisposing and contributing factors. The relationship of infection and stasis to the occurrence of urinary lithiasis has been mentioned repeatedly,<sup>1</sup> and the role of urinary colloids and crystalloids in the formation of stones has been referred to.<sup>2</sup> The urinary excretion of such substances as cystine<sup>3</sup> and uric acid<sup>4</sup> are known to predispose to calculi of similar composition, and vitamin deficiencies, diseases of nutrition<sup>5</sup> and other metabolic disorders<sup>6</sup> and

organic diseases<sup>7</sup> have been studied and designated as factors of an importance which varies widely with individual authors.

Since so many urinary stones are compounded calcium and phosphatic salts, studies of calcium and phosphorus metabolism have been followed with much interest by urologists. Comparatively recent and thorough investigative work on hyperparathyroidism has revealed that 27 per cent of a series of eighty-three patients with this disease had renal calculi.<sup>8</sup> Some investigators<sup>9</sup> have stated that parathyroid disease is the apparent etiologic factor in at least 10 per cent of the cases in which stones form in the urinary tract. Later, from 4 to 5 per cent was given by the same authors<sup>9</sup> as a more correct figure. It occurred to us that, if from 4 to 5 per cent was a figure representative of the incidence of parathyroid disease in cases of urinary lithiasis for the country at large, we were not recognizing hyperparathyroidism as frequently as it occurs in cases of urinary lithiasis. The purpose of this study was, therefore, to investigate the incidence of parathyroidism in cases of urinary lithiasis.

In this study, 1,206 consecutive cases of urinary lithiasis were examined for clinical evidence of hyperparathyroidism. Of this number, in 229 cases particular attention was paid to laboratory studies, including determinations of blood calcium, phosphorus and phosphatase. The range of from 9 to 11 mg. of calcium, from 3 to 4 mg. of phosphorus, and 5 units or less of phosphatase per hundred cubic centimeters of blood was used as a standard for normal evaluation. Admittedly these are narrow limits, and slight variations above or below them have not infrequently been found in other cases without urinary lithiasis or any demonstrable organic disease. Nevertheless, we felt it advisable to adhere to this narrow standard for normal values in order to insure detecting any early change which might be present in the blood of patients with urinary lithiasis. Calcium was determined by the procedure of Clark and Collip,<sup>10</sup> calcium oxalate being allowed to precipitate over night. Values for phosphatase were expressed in so-called Bodansky units and were determined by the technic described by Bodansky.<sup>11</sup> Phosphorus was determined by the technic of Kuttner and Lichtenstein.<sup>12</sup> We feel that these methods give results that are exact and are easily reproducible.

In these 229 cases of urinary lithiasis in which particular attention was paid to laboratory studies there were 111 cases in which the results with respect to the calcium, phosphorus and phosphatase content of the blood were higher or lower than normal in one or more determinations. In such cases the determinations were usually checked one or more times. Of these 111 cases, there were seventy-one in which the value for blood phosphorus was low and thirteen in which it was

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1. Braasch, W. F.: Recurring Renal Lithiasis, *Proc. Staff Meet., Mayo Clin.* 7: 169-172 (March 23) 1932. Randall, Alexander: Presidential Address, *J. Urol.* 28: 127-132 (Aug.) 1932. Keyser, L. D.: Recurrent Urolithiasis: Etiologic Factors and Clinical Management, *J. A. M. A.* 104: 1299-1306 (April 13) 1935.

2. Joly, J. S.: The Etiology of Stone, *J. Urol.* 32: 541-577 (Dec.) 1934.

3. Ewell, G. H.: Cystine Nephrolithiasis, *J. A. M. A.* 99: 2160-2166 (Dec. 24) 1932. Kretschmer, H. L.: Cystinuria and Cystine Stones, *J. Urol.* 30: 403-420 (Oct.) 1933.

4. Beer, Edwin: Uric Acid and Uric Stones in the Kidney—Uric Acid Showers and Their Diagnosis, *Surg., Gynec. & Obst.* 43: 436-442 (Oct.) 1926.

5. Higgins, C. C.: The Experimental Production of Urinary Calculi, *J. Urol.* 29: 157-170 (Feb.) 1933. van Leersum, E. C.: Vitamin A Deficiency and Urolithiasis, *J. Biol. Chem.* 76: 137-142 (Jan.) 1928. Higgins, C. C.: Production and Solution of Urinary Calculi: Experimental and Clinical Studies, *J. A. M. A.* 104: 1296-1299 (April 13) 1935. Walsh, Groesbeck, and Norton, E. M.: Massive Renal Calculi in Association with Nutritional Diseases, *South. M. J.* 27: 224-228 (March) 1934.

6. Albright, Fuller; Baird, P. C.; Copc, Oliver, and Bloomberg, Esther: Studies on the Physiology of the Parathyroid Glands: IV. Renal Complications of Hyperparathyroidism, *Am. J. M. Sc.* 137: 49-65 (Jan.) 1934.

7. Holmes, R. J., and Coplan, M. M.: Extensive Bilateral Renal Calculosis of Rapid Development Following Fracture of the Vertebrae, *South. M. J.* 27: 228-233 (March) 1934. Rosenow, E. C.: The Production of Urinary Calculi by the Devitalization and Infection of Teeth in Dogs with Streptococci from Cases of Nephrolithiasis—Summary of Results, *Illinois M. J.* 49: 28-33 (Jan.) 1926.

8. Barney, J. D., and Mintz, E. R.: Some Newer Conceptions of Urinary Stone Formation, *Tr. Am. A. Gen.-Urin. Surgeons* 27: 203-208 (May 15) 1934.

9. Barney, J. D., and Mintz, E. R.: The Relation of the Parathyroid Glands to Urinary Lithiasis, *J. Urol.* 26: 159-167 (Aug.) 1936.

10. Clark, E. P., and Collip, J. B.: A Study of the Tisdall Method for the Determination of Blood Serum Calcium with a Suggested Modification, *J. Biol. Chem.* 63: 461-464 (March) 1925.

11. Bodansky, Aaron: Phosphatase Studies: II. Determination of Serum Phosphatase: Factors Influencing the Accuracy of the Determination, *J. Biol. Chem.* 101: 93-104 (June) 1933.

12. Kuttner, Theodore, and Lichtenstein, Louis: Micro Colorimetric Studies: II. Estimation of Phosphorus: Molybdic Acid-Stannous Chloride Reagent, *J. Biol. Chem.* 86: 671-676 (April) 1930.

high in combination with normal values for calcium and phosphatase. Converting these figures into percentages, 31 per cent of the patients (seventy-one of 229) had low values for inorganic phosphorus and 5.7 per cent (thirteen of 229) had high values for phosphorus. For 31 per cent of the patients to have a lowered value for blood phosphorus is surprising, although the significance of this is lessened by the fact that less than half of the seventy-one patients who had a low value for blood phosphorus had a reading of less than 2.6 mg. per hundred cubic centimeters. As one might expect renal insufficiency to be present more frequently in cases of lithiasis, one might also expect a greater percentage of hyperphosphatemia as compared to hypophosphatemia because of the kidneys' inability to excrete phosphorus.

A high value for blood phosphatase was combined with a low value for blood phosphorus and with a normal value for calcium in five cases, although the value for phosphatase was significantly elevated in only three of these cases. Three of the five patients had a value for phosphorus of 2.8 mg., and two of 2.4 mg. per hundred cubic centimeters of blood. The value for blood phosphatase was high in combination with a normal value for blood phosphorus and calcium in ten cases, but this elevation was so slight as to be considered normal except in three cases. With exception of cases of hyperparathyroid disease, we found the high value for blood phosphatase related not so much to urinary lithiasis as to coexistent disease elsewhere in the body; namely, hepatic disease, osteitis deformans, arthritis and traumatic and metastatic bone conditions. The combination of low values for blood calcium, phosphorus and phosphatase was found in only one case.

The value for blood calcium was high in three cases and low in three cases, in combination with normal values for phosphorus and phosphatase. An elevated level of blood calcium was combined with a low value for phosphorus in three cases and was combined with high values for phosphatase and a low value for phosphorus in two. In only four of the eight cases in which the value for blood calcium was elevated was the value for blood calcium more than 12 mg. per hundred cubic centimeters. It is interesting to note that the highest value for blood calcium was 14.7 mg. per hundred cubic centimeters; it was encountered in a case of hyperparathyroidism.

In only the two cases in which the value was high for blood calcium and phosphatase and low for phosphorus was the diagnosis of hyperparathyroidism made. The chief complaint of one of these two patients was recurrent renal calculi, and a parathyroid tumor was found on surgical exploration. The values for calcium, phosphorus and phosphatase in the blood were 14.7 mg., 2.6 mg. and 10.2 units per hundred cubic centimeters of blood, respectively. Bilateral renal lithiasis was present in the other case and a clinical diagnosis of hyperparathyroidism was made; however, a parathyroid tumor was not found on exploration. The values for calcium, phosphorus and phosphatase in this case were 12.1 mg., 1.7 mg. and 9.8 units per hundred cubic centimeters of blood, respectively.

Albright<sup>6</sup> and others reported that 27 per cent of a series of twenty-three patients with hyperparathyroidism were proved at operation to have renal calculi. The two patients with hyperparathyroidism in our series

had calculi, but hyperparathyroidism did not occur often enough to be considered a factor in the etiology of urinary lithiasis. Lloyd<sup>13</sup> cited a series of 10,000 consecutive necropsies in which only five parathyroid tumors were found.

Our study of the chemical constituents of the blood of patients with urinary lithiasis has therefore failed to throw much light on the uncovering of the definite factor in the etiology of stone formation. Albright and Bloomberg<sup>14</sup> have aptly said, "The practical question in any one case where there is a tendency to form renal stones is not what is the cause of stone formation but what in that individual predisposes him to stone formation." Undoubtedly some people have a higher protective factor than others. The cause of stone formation is not just the presence of excess amounts of substances which predispose to stones of like composition. Aub and others<sup>15</sup> found the urinary excretion of calcium and phosphorus increased to 231 per cent above normal in hyperthyroidism. Yet urinary lithiasis is relatively not a common complication of hyperthyroidism. Farquharson and his associates<sup>16</sup> reported studies in which making the diet acid or adding ammonium chloride to the diet increased the urinary excretion of calcium and phosphorus up to 400 per cent. Yet in our very recent experience the solution of recently formed renal stones has occurred in two cases on administration of acidifying drugs. Clinically, the elusive factor in the etiology of stone seems to be as closely related to phosphatase activity as to hyperphosphaturia and hypercalcinuria. It is not so rare to observe orthopedic cases in which stones are being formed while the patient is in the hospital. Such references are frequently encountered in the literature.<sup>17</sup>

Some of the results of determinations of blood calcium and phosphorus in cases of urinary lithiasis reported in the literature vary greatly from the values we obtained. One author<sup>18</sup> reported that 78 per cent of thirty-seven patients with urinary lithiasis had a value for blood calcium above normal, the average value for blood calcium being reported as 12.17 mg. per hundred cubic centimeters. Kerley and Lorenze,<sup>19</sup> however, reported a series of 294 cases (all children) in which determinations of blood calcium and phosphorus were made, and found only seven children who had significant symptoms which were related to these observations.

#### CONCLUSIONS

In cases of urinary lithiasis the values for blood calcium, phosphorus and phosphatase exhibit no common change which can be termed characteristic of the group. Minor variations in the value for blood phosphorus, particularly a lowered value, are not unusual but the concentration of blood calcium is very constant.

13. Lloyd, P. C.: A Case of Hypophysial Tumor with Associated Tumor-like Enlargement of the Parathyroids and Islands of Langerhans, *Bull. Johns Hopkins Hosp.* 45: 1-14 (July) 1929.

14. Albright, Fuller, and Bloomberg, Esther: Hyperparathyroidism and Renal Disease, with a Note as to the Formation of Calcium Casts in This Disease, *Tr. Am. A. Gen.-Urin. Surgeons* 27: 195-202 (May 15) 1934.

15. Aub, J. C.; Bauer, Walter; Heath, C., and Ropes, Marion: Studies of Calcium and Phosphorus Metabolism; the Effects of the Thyroid Hormone and Thyroid Disease, *J. Clin. Investigation* 7: 97-137 (April) 1929.

16. Farquharson, R. F.; Salter, W. T.; Tibbets, D. M., and Aub, J. C.: Studies of Calcium and Phosphorus Metabolism: XII. The Effect of the Ingestion of Acid-Producing Substances, *J. Clin. Investigation* 10: 221-249 (June) 1931.

17. Ettinger, Alice, and Magendantz, Heinz: Roentgen Evidence of Extensive Calcification of the Kidneys in Osteitis Fibrosa Cystica, *Am. J. Roentgenol.* 31: 593-596 (May) 1934. Holmes and Coplan.

18. Marquardt, C. R.: Blood Calcium Studies in Urinary Lithiasis, *Wisconsin M. J.* 36: 177-182 (March) 1937.

19. Kerley, C. G.; Lorenze, E. J., and Godfrey, E. R.: Serum Calcium and Inorganic Phosphorus Determinations in 294 Children, *Arch. Pediat.* 52: 243-249 (April) 1935.

Patients with a high value for blood calcium or phosphatase who have urinary calculi should undergo a thorough investigation for some other coexistent pathologic condition.

In our study, hyperparathyroidism was found to be an etiologic factor in less than 0.2 per cent of the 1,206 cases of urinary lithiasis.

## A TREATMENT FOR THE SUPERFICIAL MYCOTIC INFECTIONS OF THE GLABROUS SKIN

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Skin diseases produced by fungi make up most likely the largest single group of dermatologic diseases, and for that matter make up perhaps the most common diseases of man. This is especially true where human contact is intimately frequent, as in schools, prisons, institutions, colleges, ships, clubs, dormitories, bathing beaches or pools and other places where people congregate or live close together. It is also easily conceived that infection is extensive in homes where incidence surveys have not been made or reported. Osborne and Hitchcock<sup>1</sup> estimated that 90 per cent of male college students indulging in athletics, from 25 to 50 per cent of high school students and 50 per cent of the general adult population have ringworm of the feet. Legge, Bonar and Templeton<sup>2</sup> found that 53.3 per cent of the men and 15.3 per cent of the women of the 3,100 freshman were infected, and at the terminal period of the spring semester that 78.6 per cent of the men and 17.3 per cent of the women had ringworm of the feet.

Other estimates of the incidence of glabrous skin mycotic disorders are similar to those cited.<sup>3</sup> Eleven ships of the U. S. Navy, six in the Orient, four on the West Coast and one on the East Coast, were surveyed, and of the 1,500 men examined 92 per cent were found affected in the early or more severe stages of ringworm disease of the glabrous skin. In 88 per cent of the cases the mycotic infection was found most prevalent between the toes or on the feet, 15 per cent on the inner thigh-scrotal-anal region, 1.8 per cent on the hands, 2.3 per cent in the axillas and 2.3 per cent in the external auditory canal of the ears.

The statement is made<sup>4</sup> that no general systemic condition such as acidosis is responsible, since healthy as well as sick persons are subject to the infection. Furthermore, the infection is not always a mild disease: Of 161 consecutive patients fourteen were

totally disabled and thirty-two were partially disabled, and in some instances the disability lasted as long as three months. One might also add here that secondary infection is not infrequent and may subsequently develop into severe conditions, becoming a focus for septic complications or even a septicemia. The hospitals could reveal the large number of such complications.

The clinical appearance is the simplest and most reliable practical diagnosis. There are many classifications presented<sup>5</sup> of the different types of glabrous skin mycotic infections and many different types of fungi responsible for the lesions of the skin. These will not be discussed here. When in the history of a case the toxic contacts, the general systemic diseases such as syphilis and the susceptible sensitizations of the patient have been eliminated and a history of exposure to ringworm disease in suspected places or to infected persons has been established, the localized areas of the skin affected with the clinical appearance of the lesion will usually picture the condition. The whitened, macerated, sodden mass of epithelium between the toes most frequently found between the fourth and fifth toes and in the external auditory canal of the ears, the fissured, scaling, eczematous areas on the hands or feet, the vesicular and pompholyx or bullous lesions on the soles or on the lateral surfaces of the fingers and feet, the flattened pigment-like or moist copper-red areas with a spreading margin found on the inner thigh-scrotal-perineal-anal areas commonly known as *tinea cruris*, the axilla erythrasma resembling the *tinea cruris* lesion often involving the folds of the skin beneath the breasts or the folds of the pendulous abdomen, the less frequently encountered pityriasis versicolor, the circinate *tinea* infections and the chronic eczematoid ringworm, often hyperkeratotic, involving the soles of the feet and occasionally extending to the legs, or when on the hands to the forearms with or without scattered vesicles and pustules are all well known manifestations of the mycotic infections of the glabrous skin.

The differential diagnosis may be difficult in some cases, and the aid of microscopic examinations (less than 50 per cent positive), patch and intradermal tests and cultural and biochemical investigations may be of assistance; however, these methods are still too indefinite for practical routine use. Much confusion exists concerning the apparent differences between the clinical pictures of vesicular eczematous and scaling fungous ids and those from contact allergens or irritants and other causes, but, as Wise and Sulzberger<sup>5</sup> point out, they are convinced that in most cases no definite distinction can be made on clinical and morphologic grounds and, as far as the actual topical therapy of the presenting manifestations is concerned, there need be little if any difference in the form of treatment selected to combat eczematous eruptions due to other causes. This idea of diagnosis and treatment of fungous infections on the glabrous skin, in the main, holds true with other eczematous and eczematoid processes that resemble or are contributory factors of the same dermatologic picture.

1. Osborne, E. D., and Hitchcock, B. S.: Prophylaxis of Ringworm of the Feet, *J. A. M. A.* **97**: 453 (Aug. 15) 1931.

2. Legge, R. T.; Bonar, Lee, and Templeton, H. J.: Incidence of Foot Ringworm Among College Students, *J. A. M. A.* **93**: 170 (July 20) 1929; Ringworm of the Feet, *ibid.* **92**: 1507 (May 4) 1929.

3. These include articles by:

Gillman, R. L.: The Incidence of Ringworm of the Feet in a University Group, *J. A. M. A.* **100**: 715 (March 11) 1933.

Sharp, E. A.: Dermatomycesis and Its Treatment, *U. S. Navy M. Bull.* **27**: 298 (April) 1929.

Fishbein, Morris, editor: Handbook on Therapy, ed. 11, Chicago, American Medical Association Press, 1937, p. 631.

Hazen, H. H.: Eczematoid Ringworm, *J. A. M. A.* **83**: 1125 (Oct. 11) 1924.

Eichenlaub, F. J.: Dermatoses Encountered Among Tuberculous and Nontuberculous Ex-Service Patients, *ibid.* **91**: 547 (Aug. 25) 1928.

Castellani, Aldo: Mycosis, *Brit. M. J.* **1**: 958 (June 2) 1928.

Legge, R. T.; Bonar, Lee, and Templeton, H. J.: Epidermomycesis at the University of California, *Arch. Dermat. & Syph.* **27**: 12 (Jan.) 1933.

Ringworm of the Hands and Feet.<sup>4</sup>

4. Ringworm of the Hands and Feet, *U. S. Public Health Service Bulletin E-28/E-572B*, Sept. 18, 1936.

5. (a) Wise, Fred, and Sulzberger, M. B.: Year Book of Dermatology and Syphilology, Chicago, Year Book Publishers, Inc., 1937, pp. 7-27. (b) Wise, Fred, and Wolf, Jack: Dermatomycesis and Dermatomycesis, *Arch. Dermat. & Syph.* **34**: 1 (July) 1936. (c) Carpenter, C. C.: Treatment of Ringworm of the Feet, *J. M. Soc. New Jersey* **32**: 467 (Aug.) 1935. (d) Wise, Fred, and Wolf, Jack: Use of the Dermal Parasiticide, *J. A. M. A.* **107**: 1126 (Oct. 30) 1936. (e) Peck, S. M.: Epidermomycesis of the Feet and Epidermomycesis of the Hands, *Arch. Dermat. & Syph.* **22**: 40 (July) 1930.



The prodigious methods and drugs used in the prevention and treatment of mycotic disorders of the glabrous skin serve only to confuse the physician as well as the patient. The experts practically all state that roentgen therapy helps materially in shortening the course of the infection, but a long series of roentgen treatments serves no good purpose, does not permanently cure and should be avoided. Carpenter<sup>5c</sup> discusses eleven popular medicaments and then states that such an extensive armamentarium tends to produce much confusion, and the selection of what is best becomes a wearisome procedure of trial and error. Wise and Sulzberger<sup>5a</sup> offered a limited number of drugs, but more than fifty were outlined for selection. The more commonly known medicaments (the favored Whitfield's, Deck's ointments),<sup>6</sup> the volatile oils,<sup>7</sup> the tinctures (iodine),<sup>8</sup> the paints (as Castellani's),<sup>9</sup> the solutions (potassium permanganate or sodium thiosulfate)<sup>10</sup> and many other forms of treatment<sup>11</sup> were tried in many hundreds of cases in my experience, without any appreciable success or confidence in their routine use.

To cite one example of unsuccessful venture with one of the aforementioned treatments, an attempt was made to use the preventive sodium thiosulfate solution as recommended by Osborne.<sup>12</sup> The men on four ships of the Fifteenth Destroyer Division in the Far East totaling 520 men were carefully examined for clinical evidence of mycotic disorders of the glabrous skin. Ninety-three per cent were affected in some stage of so-called athletes' foot. The 6 per cent found with more extensive lesions were treated locally daily in the sick bay with different remedies, and the others were instructed to use daily the available foot baths of 10 per cent sodium thiosulfate placed in the wash rooms. It was advised that socks be boiled before they were worn. The shoes were washed inside and dried during the night for wear in the morning. It was believed that the frequent scrubbing, done more than once daily, and the subsequent splashing of the foot bath solution on the deck would aid in exterminating the source of infection or reinfection. Two monthly inspections of the feet, including the short-arm inspection, followed by lectures on the care of the feet were held. After five months of this regimen 25 per cent of the 520 men were found still to be infected. The last three inspections found little improvement in reducing the incidence of the infection. Several factors may have contributed to the failure in reducing the incidence below 25 per cent.<sup>13</sup> On the question of reinfection from the shoes, gasoline was tried for a month during which the men were instructed to

wash out old shoes on the inside, allowing them to dry during the night at least twice a week. As this did not seem to make much difference in the reduction of the incidence, this procedure was abandoned. There was also a tendency of the men to avoid the foot baths owing to its dirty appearance after many had walked through it, and probably the uncomfortable feeling of a cold foot soaking following a bath added to this lack of complete cooperation; however, at least in the afternoon the men's clean-up was usually supervised by a member of the medical department. The idea seemed good and the method was pushed as there was a known reduction of the incidence; yet the ultimate complete success was not accomplished. Sodium thiosulfate wet dressings on more advanced active lesions was found entirely unsatisfactory and was abandoned in favor of other methods. This failure was later explained.<sup>14</sup>

A search for a satisfactory routine remedy over a period of seven years revealed the following:

The ointments were abandoned because they have the faculty of soiling the user's wearing apparel and other places with which they come in contact, they render an undesirable cosmetic appearance, being especially unsightly on the exposed surfaces, they are defiling and blotchy in application, and it is also possible that they assist in the spread of the infection or have a tendency in rendering the skin practically impermeable to the contained ingredients, thereby causing uncertain therapeutic action. Wise and Sulzberger<sup>5a</sup> state that ointments have a tendency to dam up secretion, plug follicular orifices and produce follicular infection and irritation. All the undesirable characteristics are more profound as and when the disease is found, most prevalent in the summer months or in tropical climates. Here the increased irritable heat of the body with the resulting increased perspiration spreads the melting salve on the surface, increasing its undesirable characteristics.

Liquid forms of treatment usually contain evaporating volatile substances, such as alcohol, which soon change the characteristics of the remedy, especially if the container is left uncovered, as frequently occurs with tincture of iodine. Owing to the natural oiliness of the healthy skin and the surface tension afforded by the skin secretions, an infected part held in solution for an extended period, which is usually necessary in skin lotion therapy, may allow the lotion to break down the natural barriers, causing a further extension of the infection into the adjoining uninfected skin. Also solutions, most of them made up with a dehydrating agent, may rapidly dry the skin or mummify it so that deep-seated extension of the applied remedy is difficult, thereby causing assistance to the infection and its further undermining extension. Dye paints, such as Castellani's paint, are most unsightly, stain the clothing as well, and have very little to offer in overcoming the infection as compared to other remedies. Applied wet dressings or compresses, unless repeatedly kept moist, soon dry out, adding irritation as a foreign body to the already irritated affected part. Any moist dressing is uncomfortable and avoided by the patient when not confined to bed. Soaks such as foot baths have the undesirable properties already mentioned and in addition are time consuming, which is always annoying to the patient. Relating to the proprietary remedies, most authors agree in their condemnation.<sup>15</sup>

6. Williams, C. M., and Barthel, E. A.: Tinea of the Toe Nails as a Source of Reinfection, *J. A. M. A.* 93: 907 (Sept. 21) 1929.

7. Myer, H. B., and Thine, C. H.: The Fungicidal Activity of Certain Volatile Oils and Sterapens, *J. A. M. A.* 84: 1985 (June 27) 1925. Strickler, Albert: Fungicidal Properties of Certain Clinically Recognized Fungicides, *Arch. Dermat. & Syph.* 28: 836 (Dec.) 1933.

8. Strickler.<sup>7</sup>

9. Legge, R. T.; Bonar, Lee, and Templeton, H. J.: Epidermomycosis at the University of California, *Arch. Dermat. & Syph.* 29: 520 (April) 1934. Castellani.<sup>9</sup>

10. Osborne and Hitchcock.<sup>12</sup> Wise and Sulzberger.<sup>5</sup>

11. Symposium on the Treatment of Mycoses of Foot, *Dermat. Wehnschr.* 100: 566 (May 18) 1935.

12. Osborne, E. D.; Putnam, E. D., and Rickloff, R. J.: Personal Experiences in the Prophylaxis and Treatment of Ringworm of the Hands and Feet, *New York State J. Med.* 33: 1270 (Nov. 10) 1933. Osborne and Hitchcock.<sup>12</sup>

13. (a) Strickler, Albert, and McKeever, W. H.: Recurrence of Infection of the Feet Due to Ringworm Fungus, *Arch. Dermat. & Syph.* 29: 526 (April) 1934. (b) Jamieson, R. C., and McCrea, Adelia: Recurrence or Reinfection in Ringworm of Hands and Feet, *Arch. Dermat. & Syph.* 25: 321 (Feb.) 1932. (c) Gould, W. L.: Ringworm of the Feet, *J. A. M. A.* 96: 1300 (April 18) 1931. (d) Jamieson, R. C., and McCrea, Adelia: Shoes as a Source of Reinfection in Ringworm of the Feet, *Arch. Dermat. & Syph.* 35: 203 (Feb.) 1937. Wise and Wolf.<sup>24</sup> Williams and Barthel.<sup>6</sup>

14. Legge, Bonar and Templeton.<sup>2</sup>

15. Legge, Bonar and Templeton.<sup>2</sup> Ringworm of the Hands and Feet.<sup>9</sup> Osborne, Putnam and Rickloff.<sup>12</sup> Carpenter.<sup>5c</sup>

It would seem, therefore, that the simple method of application of powder rubbed into the affected part offered the best means of local therapy on the mycotic infected glabrous skin and, with the expectation of the patient's cooperation, various prescriptions of powder remedies were tried. Some were more successful than others. After process of elimination the compounds of salicylic acid, boric acid, camphor, menthol and starch were found most satisfactory. A pharmaceutical analysis of the properties gave the clue for their successful use. Briefly, the formula has a keratolytic action which allows the ingredients to attack directly the infection beneath the surface of the dead skin. However, even as salicylic acid is an exfoliant and assists in stimulating resistance, it is usually quite irritating in higher percentages of from 1 to 3 when applied directly or in other known combinations, especially to an inflamed skin. This formula revealed a synergic action with the other ingredients, allowing even higher percentages than the usually sufficient 5, without interfering with the soothing qualities of the formula's analgesic property, most necessary to relieve the pruritus often encountered in this type of infection. The antiseptic and bactericidal or fungicidal property is well supported by the contained ingredients, allowing penetration directly to the lesion, fulfilling its mission and possibly sufficiently overcoming the allergens in the dead as well as in the surrounding skin. The gentle stimulating property brings about a mild hyperemia augmenting the process of resistance and repair. The demulcent property soothes and allays the irritation of inflamed and abraded skin, which is assisted by the absorption of irritating secretions, thereby preventing excoriation. Extreme gentleness in the action of this compound can be accomplished by diluting the ingredients with more starch.

The method of application of the compound is important. The powder should be thoroughly rubbed into the skin at least daily or more frequently, depending on the severity of the infection. When pustules or bullae form, the roof should be cut from the raised lesion and the powder thoroughly rubbed into the raw diseased surface or exposed area. Any loose skin should be torn or cut away, as likewise all scales should be removed and the powder triturated into the diseased and surrounding skin. Jamieson and McCrea<sup>13d</sup> emphasize the necessity of applying remedies to normal skin adjacent to the lesion since the fungi were found in normal skin from 1 to 2 inches outside the active lesion. Also, the powder should be rubbed on the skin for several weeks after the lesions have apparently cleared up in order to prevent its reappearance as the result of the ever potential reinfection. In this way it serves as a prophylactic powder. As a prophylactic powder, especially necessary when there is continuous known exposure, it seems sufficient to use it weekly and in many cases it has prevented recurrence or new infection when used monthly. No harmful effects have been noted on clothing, shoes or other material with which it comes in contact; instead, it probably assists in exterminating the source of infection or reinfection.

The most suitable formula found for routine use in the prevention and treatment of the superficial mycotic disorders of the glabrous skin is salicylic acid 5 Gm., menthol 2 Gm., camphor 8 Gm., boric acid 50 Gm. and starch 35 Gm.

A clinical trial with this powder formula was carried out on affected men aboard five ships, the Fifth Destroyer Division and the U. S. S. *Mahan*, where 91 per cent of the men, or 576, were found infected on the initial clinical inspection or examination. Eighty-seven per cent had the infection on the feet, of which 20 per cent had the pompholyx type of infection and 5 per cent the eczematoid type. Twelve per cent of the 576 men had the disorder in the thigh-scrotal-anal region—*tinea cruris*—of which only six complained of itching symptoms while the others did not know they had the infection. Sixteen of these sixty-nine men also had an infection of the feet, two men had infections of the external auditory canal and one had an infection on the hands. Three per cent of the 576 men affected were found with axilla erythrasma, of which five cases were unilateral, seven had involvement of the foot and two had *tinea cruris*. Twelve men, or 2 per cent of the 576 men, had infections of the hands, of which five men, including myself, had a severe pompholyx with an eczematoid extension involving the hands and wrists and in two cases the forearms. Ten men were found with an infection of the external auditory canal—the macerated, sodden mass combined with swelling and inflammation. It may be well to mention here that the external auditory canals were first cleaned out by irrigation or by an applicator, and, when the swelling occluded the canal, drops of the same formula made into a liquid with alcohol were added or wet plugs of the liquid were inserted until the swelling subsided sufficiently to allow application of powder. The other men were given about 2 ounces (60 Gm.) of the powder in a paper and told to rub it in three times a day, saving the spilled overflow of the powder on the paper to be used over again.

On the second inspection, from ten days to two weeks later, as the men were available, the incidence of infection was reduced to 30 per cent. In contrast to the sodium thiosulfate experiment, the men all seemed eager to cooperate and apparently all were using the powder as advised. In fact, some of the men who were not affected asked for the powder and used it as a prophylactic.

On the third inspection, which was about a month following the initial inspection, the incidence was reduced to less than 5 per cent. On the fourth inspection, completed two months after the initial inspection, no cases were discovered.

Of the five men with severe infections of the hand, three, including myself, were free from all inflammation and mycotic evidence in two weeks, except for a slight cutaneous scaling, no doubt due to the keratolytic action of the salicylic acid. The remaining two cases were cleared up a week later.

It was not possible to observe the men personally for more than two months after the completion of the treatment, and on one ship, the *Mahan*, no later check-up inspection was made. However, it is believed as a result of subsequent observations on persons who were cured of this condition that the prophylaxis remained secure, especially if the men were instructed to continue the powder periodically and on the first appearance of any evidence of infection to use the powder often.

#### CONCLUSIONS

From the clinical trial presented it seems that the powder formula has a specific application in the preven-

tion and in the routine treatment of the superficial mycotic disorders of the glabrous skin including mycotic diseases of the axillas and the perineal regions.

#### SUMMARY

1. There is evidently a high incidence of mycotic infection of the glabrous skin—found to be 92 per cent of 1,500 men clinically examined aboard six ships.

2. Ten per cent sodium thiosulfate foot baths were used as a prophylactic for ringworm infection of the feet on four ships having 520 men, resulting in reducing the incidence from 93 per cent to 25 per cent in five months of trial.

3. The use of sodium thiosulfate wet dressings on more advanced active lesions of ringworm infection was found unsatisfactory.

4. A formula suggested for a powder used as a routine by 576 men found infected with mycotic lesions of the skin aboard five ships reduced the incidence of infection from 91 per cent to 30 per cent in about two weeks, to less than 5 per cent in about a month, and to no infection in about two months.

Navy Yard.

### RABIES

#### REPORT OF TWELVE CASES, WITH A DISCUSSION OF PROPHYLAXIS

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Between January 1929 and January 1937 twelve patients with rabies were admitted to the Cook County Hospital. All died. The diagnosis in each case was confirmed by autopsy. Rabies continues to take its deadly toll of human life, year after year, notwithstanding Pasteur's development of a successful prophylactic treatment more than a half century ago.

The series here reported comprises seven children and five adults; eleven were males; one was a Negro. The age and the racial incidence are in accord with those generally accepted, and the racial incidence evidences a certain amount of immunity in the Negro. The preponderance of males is explained by their more frequent contact with dogs.

The incubation period for our patients varied from two weeks to two months. The closer the site of the bite to the central nervous system the shorter was the incubation period. This fact was exemplified in the case of J. O., who died three weeks after receiving a bite on the face, as compared with that of W. W., whose death occurred two months after he was bitten on the foot and thigh. There was a history of preceding malaise of from two to seven days. The seven day prodrome occurred in a 17 year old white boy. He had a dog bite of the lower lip. No local treatment had been given, but he had received twenty-one daily injections of antirabic vaccine beginning one week after the injury. Immunization failed in one other child in this series. He was a white boy of 5, bitten on the face. He received no local treatment, and his inoculations were not begun until one week after the dog bite. Twenty-one injec-

tions were given in fourteen days. His prodromal symptoms began one day before the completion of the series. Three days later he died. Immunization failed in the only woman in the series. She received fourteen injections, begun one month after the bite. Active symptoms began one month after the injections had



Fig. 1.—The cry accompanying the pharyngeal spasm of rabies. The illustrations are reproductions from a 16 mm. motion picture film made by us in 1932. None are of patients reported in this series.

been completed—two months after injury. Her bite occurred on a finger, and the history states that the wound was cauterized. It does not state when or with what agent. Death resulted in every case in less than thirty-six hours after admission to the hospital.

In our series, early symptoms, when taken in conjunction with the history of a dog bite, were sufficient for diagnosis. In every instance the earliest symptom was associated with the central nervous system. Each patient gave a history of a marked change in disposition



Fig. 2.—The refusal to accept water.

at the onset of the disease. The early stage varied in length from one to seven days. No patient was brought to the hospital in this stage.

On entrance to the hospital, patients not in the terminal stage were mentally clear and soon became talkative, very agitated and physically hyperactive. Accompanying the periods of agitation there were frothing at

the mouth, inability to swallow and vomiting—in most instances of a bloody fluid. After such an episode the patient would be exhausted and lie quietly in bed. Convulsive seizures could be brought about by the slightest mental or physical irritation. These symptoms continued until the patient became completely narcotized, exhausted or comatose.

Pharyngeal spasms occurred and were of such severity as to cause the patient to clutch his throat and shriek in agony. Drooling of bloody saliva continued during the periods of quiescence as well as with the convulsive seizures.

Violent generalized clonic convulsions without loss of consciousness occurred in nine cases. There is no known

lowing was impossible, and the effort produced pain and convulsions. Even the sight of a drinking cup apparently started pharyngeal peristalsis and precipitated a spasm of the pharynx or generalized convulsions.

Temperatures varied from 103 F. (rectal) on admission to 108 F. at death. The pulse was rapid and out of proportion to the fever and increased in frequency with each convulsion.

The laboratory examinations gave indefinite results. No conclusion could be drawn from study of the blood, since in three cases it showed leukocytosis and in one, that of a child, leukopenia. Two of the patients had albuminuria and glycosuria, while a third had only albuminuria. Spinal punctures were done in five of the

Observations in Twelve Cases of Rabies

Name, Age, Sex, Color	Incubation	Days Ill. Prior to Admission	Dates of Admission and Death	Site of Bite	Prophylaxis		Symptoms	Laboratory Examinations
					Local	General		
1. E. R. 21, ♂ white	Not definite	Three	2/12/29-2/12/29	No history	0	0	Pain in left arm; maniacal; choking spells on drinking; arm and face swollen; expectorated freely; clear mentally; no convulsions	W.B.O. 26,000; R.B.C. 4,800,000, neutrophils 85, lymphocytes 15, albumin 3+, sugar 4+; spinal fluid normal
2. L. S. 51, ♂ white	1 month; 6/8/29 2 months	Two	7/29/29-7/30/29	Right hip	Unknown	0	Semicoma; frothed at mouth; angry spells; difficulty in swallowing; bloody vomitus; convulsions	Spinal fluid normal, albumin in urine 4+, sugar
3. E. B. 44, ♀ white	7/20/29	Four	9/17/29-9/19/28	Finger of right hand	Cauterization, date unknown	14 injections, begun 1 month after bite	Weakness of right hand at 1 week; inability to swallow water; restless; talkative; no convulsions	Spinal fluid 2+, Ross-Jones reaction 2, lymphocytes 125, W.B.C. 18,200, albumin 4+, many casts and white blood cells
4. L. S. 6, ♂ white	No history	Three	5/27/32-5/27/32	No history	0	0	Fever; dyspnea; nausea and vomiting; unable to drink water; mild convulsions	0
5. N. J. 6, ♂ Negro	1 month; no history	Two	10/19/34-10/18/34	Over forehead	0	0	Headache, pain over right eye; periods of agitation; would not drink; frothing at mouth; convulsions	Spinal fluid normal, W.B.C. 23,100, neutrophils 86, lymphocytes 14
6. L. M. 17, ♂ white	1 month	Seven	6/14/35-6/15/35	Left lower lip	0	21 injections, begun 1 week after bite	Difficulty in swallowing; pain in jaw and face; convulsions	0
7. W. W. 7, ♂ white	2 months; 10/7/35	Three	12/8/35-12/9/35	Foot and thigh	0	0	Nervous; twitching; difficulty in swallowing; vomiting of white foamy material; convulsions	Spinal fluid normal
8. C. R. 9, ♂ white	4-5 weeks	Two	8/16/36-8/17/36	Right wrist	0	0	Pain in back; nervous; irritable; difficulty in swallowing; vomiting of white foamy material; convulsions	0
9. W. R. 6, ♂ white	6 weeks	Two	9/4/36-9/5/36	Left cheek	0	0	Frightened; difficulty in swallowing; nervous; vomiting of mucus	0
10. J. S. 25, ♂ white	7 weeks; 7/15/36	Two	9/3/36-9/3/36	Left hand	0	0	Abdominal pain; vomiting; jerky movements of arms and legs; wildly disoriented; pupils did not react to light	Spinal fluid normal
11. J. M. 12, ♂ white	Two weeks	Two	10/4/36; died in one hour	0	0	0	Convulsions; vomiting; jerky movements of arms and legs; wild, disorientated; pupils did not react to light	0
12. J. O. 5, ♂ white	3 weeks; Bitten 6/7/36	Two	6/29/36; died in two hours	Face	0	21 injections, begun 1 week after bite	Fever; irritable and "crabby"; convulsions; frothing at mouth	0

clinical disease in which they are as severe. The movements simulated those produced by the rapid make and break of a powerful induced galvanic current. The patients tossed about without control and, unhappily, without loss of consciousness. One little boy, whom we observed closely, cried piteously to be held to prevent the violent movements. Mentally he was more than usually alert during the seizures. Two of the adults and one child had no convulsions at any time.

An expression of anxiety, widening of the palpebral fissures, with exposure of the scleras, and the wide-open mouth accompanying the cry of terror made up a fairly typical facies in the children. There was little or no blinking of the eyelids after the disease became evident. With each attack of pharyngeal spasm the mouth was opened wide and there was a shriek of terror. Swal-

lowing was impossible, and the effort produced pain and convulsions. Even the sight of a drinking cup apparently started pharyngeal peristalsis and precipitated a spasm of the pharynx or generalized convulsions.

Treatment was entirely symptomatic. Its object was to induce rest, prevent suffering and control convulsions. Large doses of sedatives were needed. In adequate doses chloral, bromides, avertin with amylene hydrate and morphine were equally effective. A dark, quiet room without drafts or other disturbances was conducive to control of the convulsions. Attempts to give food or liquid are contraindicated.

We are presenting, in the accompanying table, the clinical histories of these patients for the purpose of encouraging active interest and militant effort toward the eradication of this universally fatal disease. Eradication must be brought about through the education of the public to the dangers of uncontrolled dogs, to the possible result of an animal bite and to the necessity for the immediate medical treatment of such a bite.



Fig. 3.—This is not tear of water. It is the patient's recognition of the inability to swallow.

Since in over 90 per cent of a large series of reported cases (and in all of ours) the disease occurred as a result of a dog bite, first attention should be directed to the elimination of the disease in this animal. To accomplish this the following measures are necessary: (1) the institution of an effective national and interstate quarantine period of observation for dogs not constantly caged or on leash, (2) the impounding or destruction of all stray dogs, (3) the rigid enforcement of statutes relating to licensing and to the impounding as strays of dogs not licensed, (4) the requiring of anti-rabic inoculation of all dogs as a requisite to the issuance of a license and repetition of inoculation at six month intervals<sup>1</sup> and (5) the muzzling of all but working dogs when not on leash or on the owner's premises.

The second phase of the problem demands the prompt reporting of all bites to public health authorities so that the dog which has inflicted a bite may be placed under veterinary observation for two weeks.<sup>2</sup> As a rabid animal lives but five or six days, a dog which lives beyond that period and does



Fig. 4.—The palpebral orifice between convulsions. This wide-eyed stare is constant and characteristic.

not acquire the disease in the two weeks of observation may be considered nonrabid and returned to its rightful owner. Strays should be publicly impounded and destroyed. If avoidable, a dog should not be killed during capture. If it is killed or dies while under observation, the brain should be examined for Negri bodies.

The bitten person must report immediately to a physician for treatment. The treatment of animal bites has been standardized. Deviation from the standard is not in accordance with medical experience. Every animal bite in which the skin is broken should be cauterized immediately with fuming nitric acid, a glass rod or capillary pipet being used. The acid should be carefully used and not neutralized. Such cauterization not only insures against the pyogenic infection common after bites but if done thoroughly within forty-eight hours is an important factor in the prevention of rabies.<sup>3</sup>

Antirabic vaccine should be administered (1) to any person bitten by or contaminated in any way by the saliva of an animal known to be rabid and (2) to any one bitten by an uncaptured stray animal.

When the bite is on the head or the neck, administration of the vaccine should be begun immediately but may be discontinued if the animal is proved nonrabid after impounding and observation. A negative report for Negri bodies on an animal killed before sufficient time has elapsed for such bodies to form is not an indication to discontinue treatment.

When the bite is by a sick dog or a dog which becomes sick while under observation, injections should be continued until rabies is definitely ruled out. If the report is positive, the series of injections should be completed.

The Semple modification of the Pasteur treatment is commercially available and should be given twice daily for from twenty-one to twenty-eight doses for a bite about the head or neck. For a mild bite in a region of the body distant from the brain, fourteen daily doses are considered adequate.

In the series of cases here reported not one patient was treated in accordance with the rules mentioned. In some instances cauterization was done late or not at all, and in others the administration of vaccine was begun late or not at all. The result was death.

The effectiveness of antirabic vaccine is best estimated from the statistics reported by McKendrick.<sup>4</sup> He reports that 162 persons (0.23 per cent) died of rabies in a series of 69,541 who had been given prophylactic vaccine. There were nineteen instances of post-vaccinal paralysis, a percentage of 0.027, in his series. No analysis of cauterization in his series is available.

Statistics on dog bites in the United States are not available. However, Illinois may be considered as a "sample" of the occurrence of bites in thickly populated states. In 1936 in this state 18,466 persons were reported to the department of public health as having been bitten by dogs. Ten deaths occurred from rabies. The cost and inconvenience of local treatment and immunization of this large group of people deserve serious consideration. Even if the disease were not a fatal one, the fact that 18,466 people were reported bitten should arouse public sentiment favoring the control of dogs. The compilation of adequate statistics for

1. McLaugh, E. T.: Rabies, a Continuing Challenge, South. M. J. 29: 556 (June) 1936. Mulcahy, J. V.: Experience with Canine Antirabic Vaccine, Canine-Feline Practice, published by North American Veterinarian, Jan. 12, 1928. The value of inoculation even under these circumstances is questioned by some authors; e. g., Barnes, M. F.; Metcalf, A. N.; Martindale, W. E., and Lentz, W. J.: Canine Rabies: Experimental Vaccination, Am. Vet. A. 84: 740 (May) 1934.  
2. Manual for Health Officers, State of Illinois, Dec. 31, 1935.

3. Olsen, Robert: The Control of Rabies in New York City, Pub. Health Rep. 50: 1087 (Aug.) 1935.  
4. McKendrick, A.: Fifth Analytical Review of Reports from Pasteur Institutes on the Results of Antirabies Treatment, Quart. Bull. Health Organ. 3: 613-653 (Dec.) 1934.



the United States on dog bites and on loss of life by man and animal from rabies transmitted by dogs should be the basis for a campaign of public education. The result of such education would be the eradication of rabies.

COMMENT

All bites by animals should be regarded with suspicion. The animal should be kept under observation



Fig. 5.—The wide-eyed stare during a rabic convulsion.

for a length of time sufficient to allow clinical and laboratory diagnoses to be made. Stray dogs and cats have no place in a civilized social order.

Wounds made by the bites of animals should immediately be cauterized with nitric acid. The Pasteur treatment or one of its modifications should be instituted in accordance with rules outlined and accepted.

The twelve persons whose case reports are included died after suffering great agony and might have been saved if adequate prophylactic measures had been instituted immediately. All were infected by dog bites. Stringent enforcement of regulations governing ownership, licensure, muzzling and leashing of dogs would have prevented the bites.



Fig. 6.—The bloody drooling and facial expression accompanying the pharyngeal spasm of rabies. Note the hand on the throat. This is characteristic.

The extent of this problem is evidenced by the fact that in the state of Illinois alone 18,466 dog bites were reported to the state department of public health in 1936 and that there were ten deaths from rabies. A knowledge of similar facts would divulge a tremendous loss of time and of lives of human beings and animals in the United States from a preventable cause. When such knowledge becomes public it will be of inestimable educational value in the eradication of this dreadful malady.

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## TYPHOID PYELONEPHRITIS, RENAL TYPHOID FEVER

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PHILADELPHIA

The typhoid bacillus like other members of the Eberthella group of bacteria is usually associated with disease of the intestinal tract, yet many instances occur wherein it localizes and causes infection elsewhere in the body. The frequency with which typhoid bacilli invade the blood during typhoid fever accounts for their dissemination to other parts of the body, and when localization does occur elsewhere it is usually regarded as a complication. Serious diagnostic problems arise when the bacilli attack vital areas like the meninges, the lungs or the kidneys, especially if intestinal symptoms are minimal or absent, as they sometimes are. Etiologic diagnosis under these circumstances is of especial importance, since patients with typhoid pneumonia or typhoid renal infection are dangerous as disseminators of infection and their excretions may spread typhoid bacilli widely unless proper measures are used to disinfect the sputum or urine before disposal. In the case of typhoid renal infection, etiologic diagnosis is apt to be missed unless careful differential bacteriologic tests are made. Since the colon bacillus, which closely resembles the typhoid bacillus, is by far the commonest cause of pyelitis or pyelonephritis, gram-negative bacilli found in purulent urine may be dismissed as colon bacilli in routine laboratory diagnosis if no further study is made. Other gram-negative bacilli may also cause infection of the urinary tract. Neter<sup>1</sup> recently collected fourteen cases of infection caused by *Bacterium dysenteriae* and added three cases of his own in which symptoms arising from the intestinal tract were absent. The important point to emphasize in infections of the urinary tract, as with infections of the respiratory, digestive and other systems, is that diagnostic anatomic terms such as pyelitis or pyelonephritis are no longer sufficient. It is necessary for purposes of preventive medicine and specific therapy to establish etiologic diagnoses by bacteriologic methods in every case and to employ such terms as colon bacillus pyelitis, pneumococcus type XIV pyelonephritis or typhoid pyelonephritis as the case may be.

According to Patch,<sup>2</sup> typhoid infections of the kidney are more common than has been generally believed. In one series of cases<sup>3</sup> pyuria was present in 17 per cent of cases of typhoid fever. MacKenzie<sup>4</sup> recovered *B. typhosus* and *B. paratyphosus* four times among 468 samples of catheterized urine. The typhoid lesions most commonly found in the kidney are acute bilateral cortical and interlobular areas of suppuration with pyelitis, ureteritis, cystitis and perinephric abscess. Chronic pyonephrosis may result. The onset of the renal infection may occur during an attack of typhoid, during convalescence or at a later date, sometimes many years afterward. In certain cases there may be no history or clinical or pathologic evidence of intestinal involvement at all.

From the Department of Medicine, Jefferson Medical College and Hospital.

1. Neter, Erwin: Infections of the Urinary Tract Due to *Bacterium Dysenteriae*, *J. Infect. Dis.* 61: 338-340 (Nov.-Dec.) 1937.

2. Patch, F. S.: Typhoid Infections of the Kidney, *J. Urol.* 14: 199-221 (Sept.) 1925.

3. Blumer, George: Pyuria in Typhoid Fever, *Johns Hopkins Hosp. Rep.* 6: 327-342, 1895.

4. MacKenzie, D. W., and Cochrane, W. J.: A Preliminary Report on the Bacteriology of Ureteral Cultures, *J. Urol.* 12: 113-119 (Aug.) 1924.

Typhoid pyelonephritis or renal typhoid, with which this paper deals, is an uncommon complication of typhoid fever, and is rarer still as a primary disease without evidence of intestinal infection. Posselt<sup>5</sup> was able to find only one report of an authentic case with necropsy in which the disease was limited entirely to the kidney without symptoms or other evidence of intestinal infection. He cites three other cases in which clinical studies alone were made. In the present case report another patient with bilateral typhoid pyelonephritis is described in whom no evidence of intestinal typhoid fever was present.

#### REPORT OF CASE

**History.**—A youth aged 17 lived in Bristol, Pa.; but went to work on a farm in July 1937, where he drank water from a pump. He stated that the urine began to be dark or reddish about August 5. About a week later he noted the gradual onset of headache and pains in the back, legs and arms. August 15 a chill occurred, followed by sweating, and he felt ill enough to go to bed. Chills recurred daily for three days. He had several nosebleeds. He was admitted to the hospital August 19, probably about the eighth day of illness, with a fever of 39.4 C. (103 F.) and a pulse rate of 96.

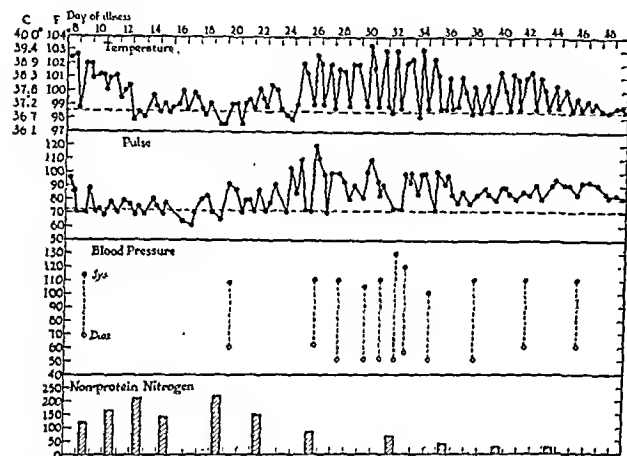


Fig. 1.—Record of the temperature, pulse rate, blood pressure and non-protein nitrogen of a patient with typhoid pyelonephritis.

He did not remember ever having had typhoid fever, venereal infection or other serious illness but had usually enjoyed good health. The patient was well developed but drowsy and obviously very ill. The pharynx was reddened. The heart and lungs were normal. The blood pressure was 113 systolic and 70 diastolic. There were marked tenderness and protective rigidity in the right upper quadrant of the abdomen. The spleen and liver were not palpable because of the rigidity. There was tenderness in the right lumbar region posteriorly. The red blood cells numbered 3 million, the leukocytes 5,800. The hemoglobin content was 60 per cent. There was slight albuminuria, the specific gravity of the urine was 1.002, and 200 leukocytes and a few erythrocytes were present in a high power microscopic field in an uncentrifuged sample. The total quantity of urine in twenty-four hours was 1,500 cc.

The intern suspected (1) pyelonephritis of the right kidney, (2) typhoid fever and (3) subacute bacterial endocarditis. A culture was then made of a sample of urine and a pure growth of *B. typhosus* was recovered, but the Widal reaction and blood culture were negative. The nonprotein nitrogen measured 123 mg., the creatinine 7 mg. A diagnosis of typhoid pyelonephritis was made.

The patient's condition remained about the same for several days, except for repeated vomiting and an increase in the amount of nonprotein nitrogen as shown in figure 1. The temperature

then declined and he felt and looked better. On the seventeenth day the condition became worse, although the temperature remained low. A transient erythematous eruption, believed to be toxic in origin, appeared over the extensor surfaces of the arms, legs and back. The output of urine varied between 1,500 and 2,000 cc. a day, increasing to 2,500 and 3,000 cc. after the seventeenth day, and many red blood cells were present. The amount of nonprotein nitrogen in the blood rose to 205 mg. and the creatinine to 9.6 mg. The patient was more stuporous and appeared to be approaching a uremic state. The blood pressure did not rise. A few rose spots appeared on the abdomen. He was given dextrose solution intravenously.

The temperature rose again to higher levels on the twenty-fifth day and remained high for ten days, as shown in the chart, but the patient slowly improved clinically. The amount of nonprotein nitrogen in the blood gradually returned to normal. The systolic blood pressure, surprisingly, was never elevated, except on one occasion when it was 130; the diastolic pressure dropped to 50. There was no edema. The ocular fundi showed no abnormalities. A pyelogram after the intravenous injection of an opaque iodized substance (skioidan) was made on the thirty-fourth day. Both kidneys appeared to be normal in size and shape. The substance was too faintly visible to determine the shape of the calices of either kidney. The bladder after one hour was faintly discernible. Albuminuria, pyuria and hematuria persisted, and in tests on the thirty-ninth day the output of phenolsulfonphthalein was 45 per cent and the urea clearance test 52 per cent of normal. Typhoid bacilli were present in most samples of urine until the fifty-fifth day. The urea clearance test on the sixty-sixth day showed improvement up to 83 per cent clearance. No granular casts were seen until the seventieth day. The blood leukocytes never exceeded 9,500 and the erythrocytes averaged about 3 million. The Widal test and blood culture were never positive.

After the forty-second day the temperature gradually declined and reached normal on the forty-eighth day. The patient improved, but hematuria, cylindruria and pyuria persisted. On the fifty-second day another pyelogram revealed that the opaque substance appeared in the kidneys five minutes after intravenous injection, but the shadow did not become dense as would be expected normally. The pelvis and calices of both kidneys appeared normal in shape. The ureters were catheterized by Dr. David M. Davis on the sixty-third day, and pus and blood were found in the urine from both kidneys. Cystoscopy showed no evidence of obstruction or anomaly. The bladder wall was normal.

The problem of therapy with mandelic acid was considered early in the illness, but the drug was not given then because of the possible danger of aggravating the severe renal infection. Later, when the acute stage had passed and because of the persistent typhoid bacilluria, syrup of mandelic acid 10 cc. four times a day was given on the sixty-fifth day and continued for two weeks. Cultures made of the urine after this time were sterile. The patient resumed good health but albuminuria from 20 to 60 pus cells per high power microscopic field and hyaline and granular casts were present in the urine when the patient was discharged November 14, ninety-five days after the onset of his illness.

**Follow-Up Study.**—The patient was induced to reenter the hospital for study in June 1938, ten months after the onset of his illness. Since leaving the hospital in November he had resumed his usual mode of life, but in April he left school one day feeling feverish. He had two shaking chills several hours apart and a temperature of 38.9 C. (102 F.). The urine at the time became a dark brownish red. After three days in bed he recovered. No studies were made of this illness, which presumably was a recurrence of his renal infection. When he was reexamined in June no abnormalities were found other than the laboratory data. The temperature and pulse rate were normal; the blood pressure was 100 systolic and 75 diastolic. The weight was 64 Kg. (141 pounds). The amount of urine per day varied from 1,000 to 1,500 cc. The specific gravity in two concentration tests was rather fixed and varied from 1.010 to 1.018. Albuminuria (1+), granular casts and red blood cells were present in all samples examined. Leukocytes were

5. Posselt, Adolf: Atypische Typhusinfektion: Typhus ohne Darm-erkrankung (Extraintestinale Typhuslokalisationen mit spezieller Berücksichtigung der primären Typhosen Gallenwege und Leberprozesse), *Ergebn. d. allg. Path. u. path. Anat.* 16: 184-340 (1. abt.) 1912.

present in normal numbers. Four samples of urine were sterile on culture. The urea clearance was 84 per cent of normal and the urea nitrogen of the blood measured 16 mg. The plasma proteins totaled 8.5 mg., of which 4.7 was albumin and 3.8 globulin. A pyelogram made after the intravenous injection of an opaque substance showed no abnormalities. The hemoglobin was 70 per cent and the red blood cells numbered 4,100,000. The ocular fundi were normal. Cultures of the feces and duodenal contents were negative for *B. typhosus*.

Several peculiarities stand out with regard to the diagnosis of pyelonephritis; the blood pressure did not rise perceptibly, although the blood metabolites were greatly increased and roentgenographic and other evidence of diminished function of the kidneys were present; casts did not appear in the urine until the seventieth day, and no changes were noted in the eyegrounds. Nevertheless all other evidence, including the uremic symptoms and the results of ureteral catheterization, indicated the existence of bilateral pyelonephritis.

The question may be raised as to whether the case can be considered to be of "primary" typhoid pyelonephritis. In addition to the systemic symptoms of typhoid fever, evidence of renal insufficiency and pain in the right lumbar region pointed to a localization of the infection in the kidneys almost at the beginning of the disease. Dark urine was actually noted by the patient before the onset of clinical symptoms, but reliance on his observation is uncertain. It is probable that the patient was infected by drinking contaminated water on the farm and that the bacilli entered the blood from some place in the intestine. Flexner<sup>6</sup> believed it possible for typhoid bacilli to pass through the bowel wall into the blood without leaving a lesion, but it is very likely that in most cases renal infection is secondary to a lesion at the portal of entry in the bowel no matter how trivial or symptomless the latter may be. There is no evidence in the case described here that the intestine was ever involved in an inflammatory reaction, since diarrhea was not noted and blood and typhoid bacilli were never found in the feces. Controversy on this point, however, is unimportant. The important fact is that the kidneys may bear the brunt of a typhoid infection regardless of the portal of entry or pathway of infection, and the symptoms of pyelonephritis may dominate the illness.

As to the mode of infection of the kidneys, it is generally believed to be, and most likely is, blood borne. Infection is especially liable to occur during bacteremia if the kidney is not normal, that is if any factors such as stone, trauma, hydronephrosis, congenital anomaly or other conditions are present to cause obstruction to the flow of urine. Hematogenous infection usually results in disease of both kidneys, and the lesions are found in the cortex and medulla since both areas are supplied with blood by branches of the arcuate artery as shown in the inset in figure 2. Another route of infection to the right kidney is said to exist in the communication

of the lymphatics between the ascending colon and the capsule of the kidney (fig. 2), which may be of particular importance in typhoid fever or other enteric disease. There is also known to be a communication between the lymphatics of the kidney substance with those of the fatty capsule (inset *a*, fig. 2). This communication may account for the occasional development of perinephric abscess in typhoid fever. After infection becomes established in the kidney it may spread from place to place by way of the meshwork of lymphatics around the tubules and glomeruli, extending from the tip of the papilla to the capsule. It is conceivable that the involvement of much of the renal substance may

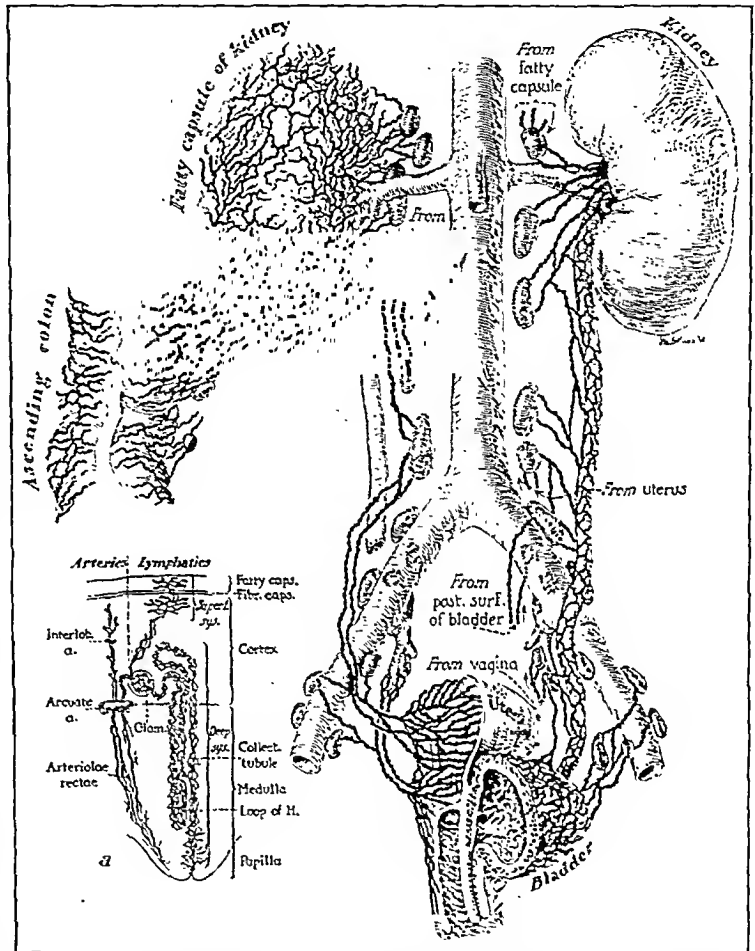


Fig. 2.—Schematic diagram of possible pathways of infection to the kidney. The lymphatic connection between the ascending colon and the capsule of the right kidney is shown. The arterial system in inset *a* shows how hematogenous infection may occur in any portion of the kidney and how it may spread by way of the network of lymphatics which extend from the tip of the papilla through the kidney substance and communicate with the lymphatics of the renal capsule. (Reproduced by courtesy of Lea & Febiger from chapter XX, *Infections of the Kidney* by H. A. Reimann in *The Kidney in Health and Disease*, Hilding Berglund and Grace Medes, 1935.)

eventually lead to permanently damaged secreting tissue as genuine interstitial nephritis, resulting in the so-called schrumpfnier, or granular contracted kidney.

#### SUMMARY

In a case of typhoid pyelonephritis presenting systemic symptoms and signs of typhoid fever lasting forty-seven days, the clinical features were remarkable in that no symptoms referable to the intestinal tract were noted. The main interest centered about the typhoid state with threatened uremia and evidence of retention of metabolites, typhoid bacilluria, pyuria,

6. Flexner, Simon: *Certain Forms of Infection in Typhoid Fever*, Johns Hopkins Hosp. Rep. 5: 343-378, 1895.

hematuria and pain in the right lumbar region, which were present as early as the eighth day of illness. The patient recovered, but pyuria, bacilluria and hematuria persisted. Typhoid bacilli disappeared from the urine after the administration of mandelic acid. Evidence of active renal disease ten months after the acute attack supports the growing mass of evidence that renal infections, particularly in childhood, must be looked on as a cause of subsequent kidney disease.<sup>7</sup> Whether chronic nephritis and hypertension will eventually develop in this case can be determined only by future examination.

It is important to establish etiologic diagnosis promptly in all cases of acute or chronic pyelonephritis, since there is no doubt that patients like the one described may serve as a dangerous source of infection to others if proper precautions are not taken to sterilize the urine before its disposal.

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## THE USE OF SERUM IN THE TREATMENT OF THE HIGHER TYPES OF PNEUMONIA

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When the thirty-two types of pneumococcus were first described by Cooper, Edwards, Rosenstein, Walter and Peizer,<sup>1</sup> the work was considered highly academic and of little practical significance. However, chiefly because antipneumococcus serum is still the only specific therapeutic agent proved to be useful in the treatment of pneumonia and because all attempts to prepare a nonspecific or a polyvalent serum have failed, the separation into the higher types has become increasingly important. Only two of the original thirty-two types have been dropped: type XXVI, cross agglutinating with type VI, and type XXX, cross agglutinating with type XV. The remaining thirty types account for over 99 per cent of all strains of pneumococcus.

Table 1 was prepared to show the relative incidence of the more frequent types of pneumococcic pneumonia of adults. Seventy-eight per cent of 6,545 cases studied in New York, Boston, Cincinnati and San Francisco by Bullowa,<sup>2</sup> Finland,<sup>3</sup> Benjamin, Blankenhorn, Ruegsegger and Senior<sup>4</sup> and Kohl and Reitzel,<sup>5</sup> occurred in eight of the specific types. Type I pneumonia stands by itself as the most common, but types II, III, V, VII and VIII had a surprisingly similar incidence in this large series. It is noteworthy that the higher types cause

over 50 per cent of all pneumococcic pneumonia. Preparations of concentrated serum for types IV, V, VII and VIII, as well as for types I and II, have already been accepted by the Council on Pharmacy and Chemistry. In addition, serum is at present being used for types III, VI, XIV and XVIII, and within a short time serum will have been prepared for all thirty types.

This report is presented to give my experience and that of my associates with concentrated serum in the treatment of pneumonia due to the pneumococcus of types other than I and II. In the ten year period 1928 to 1938, 561 cases of pneumonia of types other than I, II and III were studied, 492 at Bellevue Hospital and sixty-nine at New York Hospital. The distribution of the different types and the number of deaths from each type are given in table 2. One hundred and eleven of the patients received specific antipneumococcus serum. In addition, during the last year nine patients with type III pneumonia were treated with rabbit antipneumococcus serum. In 145 cases of the less frequent types there were thirty-eight deaths (26 per cent).

The methods of treatment have changed from time to time, following a trend to procure more rapid typing and to treat the patients earlier.

Typing in the earlier cases was done by the mouse method of Avery, but this was soon supplanted by Sabin's slide agglutination method, and in the past five years the Neufeld method, as described by Sabin,<sup>6</sup> has been the one principally used. By this procedure the diagnosis was made in a good proportion of the cases within one hour of the time at which typing was instituted. Specimens other than sputum, such as material swabbed from the throat, blood for culture, spinal fluid and pleural fluid, were also studied by the Neufeld

TABLE 1.—The Incidence in Adults of the More Prevalent Types of Pneumococcic Pneumonia

Type	Cases	Percentage
I.....	1,720	26.3
II.....	646	9.9
III.....	780	11.9
IV.....	286	4.4
V.....	533	8.1
VII.....	468	7.2
VIII.....	489	7.5
XIV.....	179	2.7
Remaining strains.....	1,444	22.1
Total.....	6,545	
	Cases	
Bullowa.....	3,720	
Finland.....	2,229	
Benjamin and his associates.....	453	
Kohl and Reitzel.....	111	

7. Longcope, W. T.: Chronic Bilateral Pyelonephritis: Its Origin and Its Association with Hypertension, *Ann. Int. Med.* 11: 149-163 (July) 1937.

From New York Hospital, the Second (Cornell) Medical Division of Bellevue Hospital and the Department of Medicine, Cornell University Medical College.

Read before the Section on Pharmacology and Therapeutics at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 17, 1938.

1. Cooper, Georgia; Edwards, Marguerite, and Rosenstein, Carolyn: The Separation of Types Among the Pneumococci Hitherto Called Group IV and the Development of Therapeutic Antiserums for These Types, *J. Exper. Med.* 49: 461 (March) 1929. Cooper, Georgia; Rosenstein, Carolyn; Walter, Annabel, and Peizer, Lenore: The Further Separation of Types Among the Pneumococci Hitherto Included in Group IV and the Development of Therapeutic Antisera for These Types, *ibid.* 55: 531-554 (April) 1932.

2. Bullowa, Jesse G. M.: The Management of the Pneumonias, London, Oxford University Press, 1937.

3. Finland, Maxwell: The Significance of Specific Pneumococcus Types in Disease, Including Types IV to XXXII (Cooper), *Ann. Int. Med.* 10: 1531-1543 (April) 1937.

4. Benjamin, Julien E.; Blankenhorn, Marion; Ruegsegger, James M., and Senior, Fannie A.: A Study of the Diagnosis and Treatment of Lobar Pneumonia According to Types and Specific Serum Therapy, *Ann. Int. Med.* 11: 437-447 (Sept.) 1937.

5. Kohl, Cordula, and Reitzel, R. J.: Type Specificity in Pneumonia and Pneumococcic Infections, *J. A. M. A.* 106: 1557-1561 (May 2) 1936.

method. In some instances preliminary cultures and other modifications of the method were necessary. Most of the type determinations were repeated at least once before the final diagnosis was made, although the use of serum was usually started after the first report. In most of the cases at least one blood culture was made. Punctures of the lung were performed in only a few of the cases, because of the possible complications of this procedure.

The mode of administering serum also was changed a number of times during the ten year period, chiefly because of improvement in the preparations used. The first patients were treated with unrefined horse serum, which produced reactions with most injections and which necessitated divided doses of serum. Methods

6. Sabin, Albert B.: Immediate Pneumococcus Typing Directly from Sputum by the Neufeld Reaction, *J. A. M. A.* 100: 1584-1586 (May 20) 1933.

have now been devised for refining and concentrating both horse and rabbit serum, making it possible to obtain preparations that are highly concentrated and almost entirely devoid of reaction-producing substances. The serum can now be given in larger single doses.

When serum is being administered, either rabbit or horse, refined or unrefined, all the precautions against allergic and other foreign protein reactions must be

pneumonia. The temperature drops rapidly, very much as in a normal crisis, and all symptoms of toxemia frequently disappear within twenty-four hours of the institution of treatment. In addition, the effect on bacteremia seems to be as marked as that described with type I serum. The accompanying charts show the clinical course of patients treated early with an adequate amount of potent serum. Chart 6 shows the striking clinical effect of rabbit antipneumococcus serum of type XVII in a case of postoperative pneumonia.

TABLE 2.—Distribution of Types of Pneumococcic Pneumonia in the Present Series

Type	Cases	Deaths	Type	Cases	Deaths
IV.....	78*	19	XVIII.....	8	1
V.....	112*	34	XIX.....	7	2
VI.....	32*	11	XX.....	10	5
VII.....	119*	22	XXI.....	1	0
VIII.....	75*	17	XXII.....	8	2
IX.....	17*	4	XXIII.....	7	3
X.....	17	6	XXIV.....	1	0
XI.....	4	1	XXV.....	9	2
XII.....	5	2	XXVII.....	1	0
XIII.....	11	3	XXVIII.....	5	1
XIV.....	22*	5	XXX.....	3	0
XV.....	1	1	XXXI.....	..	..
XVI.....	..	..	XXXII.....	1	0
XVII.....	4*	0			
Total.....				561	141

\* Includes cases in which serum was used and cases in which it was not used.

taken. A fresh preparation of epinephrine, 1:1,000, should always be at hand. The history should be taken, because it occasionally reveals the only clue for discovering an allergic state. Both the ophthalmic and the intracutaneous test, in our experience, have been found valuable as preliminary tests for sensitivity. A positive ophthalmic test with a 1:10 dilution of whole serum is considered a contraindication to the use of serum. A positive intracutaneous test is not a contraindication to the further injection of serum but serves as a warning against a possible allergic reaction. It is true that a good percentage of the patients with a positive intracutaneous test can take serum intravenously without any further sign of reactivity. The intracutaneous test with rabbit serum has been found to be just as reliable as that with horse serum.

After the two tests, our present routine is to give 0.1 cc. of therapeutic serum intravenously. If there have been no untoward reactions after one and a half hours, either 1 cc. or 5 cc. is given, the dose depending on the preparation used and the patient being treated. The third dose is given one and a half hours after the second injection and is either the remainder of the full estimated dose or the largest amount that it is believed the patient will tolerate without a reaction. Experience has shown that the massive injection is preferable to a divided dose; however, reactions should be prevented. It has been demonstrated that chills and other reactions can frequently be avoided by giving the serum in gradually increasing amounts. We feel that the thermal reactions are harmful rather than beneficial to patients with pneumonia, and our method of administration has always been planned to avoid as many reactions as possible. Our experience in giving acetylsalicylic acid and other drugs before the injection of serum as a prophylactic measure against thermal reactions has not been favorable.

Our investigation shows clinical and statistical evidence of the value of concentrated serum in the treatment of the pneumonias of the higher types. Many patients with pneumonia of a higher type, particularly of type IV, V, VII, VIII or XIV, which types are seen most commonly, show a clinical response to early serum treatment similar to that noted in patients with type I

The results of treatment with specific serum on the mortality rates for pneumonia of types IV, V, VII, VIII and XIV in 104 cases are shown in table 3. A reduction in the mortality rate is noted for types IV, V and VIII, and there is a slight lowering of the percentage for the entire series. These figures are not very striking, and one must refer to the larger series of collected cases in order to formulate any opinion on this subject. Heffron<sup>7</sup> has recently collected from the literature all the cases of these more frequent higher types. This series is also shown in table 3. A reduction in the number of deaths is noted for all the types except type IV, for which the number of cases is so small that the results may be misleading. A striking effect is noted for types V, VII and VIII, and the reduction from 27.2 per cent to 16.9 per cent in the mortality rate for the total series of 563 cases is also definite.

COMMENT

The present investigation, together with figures obtained from similar studies,<sup>8</sup> emphasizes the significance of pneumonia caused by the higher types of the pneumococcus. The mortality rates for these types, while not as high as those for types II and III, are sufficiently high to indicate the severity of the infections. The incidence of the more frequent of the higher types

TABLE 3.—Mortality Rates With and Without the Use of Serum Compared with the Rates for Similar Series of Collected Cases

Type	No Serum			Serum		
	Cases	Deaths	Mortality, %	Cases	Deaths	Mortality, %
Heffron's collected cases						
IV.....	151	30	19.9	70	23	32.9
V.....	511	168	32.9	210	34	16.2
VII.....	419	104	24.8	154	20	13.0
VIII.....	547	126	23.0	102	10	9.8
XIV.....	153	66	35.7	27	8	29.6
Total.....	1,813	494	27.2	563	95	16.9
Present series						
IV.....	66	17	25.8	12	2	16.7
V.....	82	29	35.4	50	5	10.0
VII.....	68	15	22.0	31	7	22.6
VIII.....	48	12	25.0	27	5	18.5
XIV.....	18	3	16.7	4	2	50.0
Total.....	302	76	25.2	104	21	20.2

is almost the same as that of types II and III; the rarer types when grouped together still account for a good number of cases of pneumonia. It is important however that, when the thirty diagnostic serums are used, less than 1 per cent of pneumonias are unclassified.

7. Heffron, Roderick: To be published.  
8. Finland, Maxwell, and Tilghman, R. Carmichael: Clinical and Immunological Observations in Cases of Pneumococcus Type V Pneumonia Treated with Specific Antibody, New England J. Med. 215:1211-1221 (Dec. 24) 1936. Rosenbluth, Milton B., and Block, Morris: Pneumonia Due to Type V Pneumococcus, Arch. Int. Med. 60: 567-573 (Oct.) 1937. Finland, Maxwell; Tilghman, R. Carmichael; Rueggesser, James M., and Dowling, Harry F.: Clinical and Immunological Observations in Cases of Pneumococcus Type VII Pneumonia Treated with Concentrated Type-Specific Antibody, Am. J. M. Sc. 193: 59-81 (Jan.) 1937. Bullowa,<sup>2</sup> Finland,<sup>2</sup> Benjamin and his associates,<sup>4</sup> Kohl and Reitzel.<sup>5</sup>



Perhaps the greatest advance in the past few years as far as pneumonia is concerned is the greater appreciation by the medical profession and various community and public health organizations of the seriousness of this disease and the potentialities of serum and other prophylactic measures in its control. Many states and communities are now supporting expensive pneumonia

VII, VIII, XIV and XIX. It should be pointed out that the incidence will be higher in such a study when the carrier types, such as types III, VI, VIII and XIX, are included than when only proved pneumonias are studied.

Although the total number of cases in our study is impressive, when the cases in which serum was used are distributed through the different types, no group is large enough to permit us to draw any definite conclusions. The statistical results for types IV, V, VII and VIII compared closely enough with the results in similar series to be significant. Certainly enough cases of serum-treated pneumonia of types V, VII and VIII can now be collected from the literature to show that the mortality rates for these types can be definitely reduced. Collected cases of type IV and type XIV pneumonia show only suggestive figures. As far as the remaining higher types are concerned, so few patients have been treated with serum that a statement as to the effect on fatality rates cannot be made. However, since the introduction of rabbit serum quite a number of the whole group of patients have been treated and the impression gained so far is that most types of pneu-

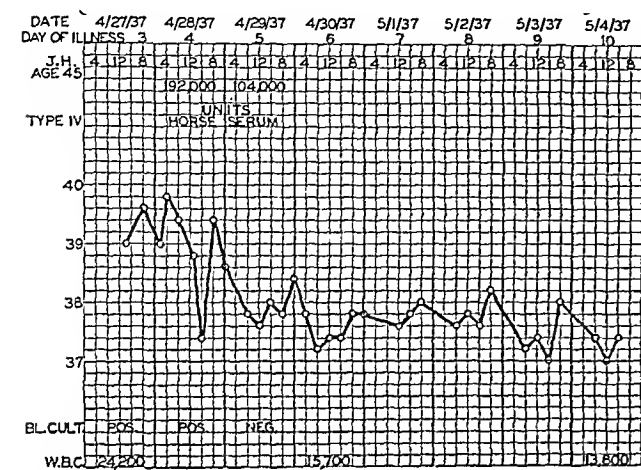


Chart 1.—Temperature curve, result of blood culture, and leukocyte count, case 1.

control programs—supplying antipneumococcus serum, establishing pneumococcus typing stations and promoting extensive educational projects. It can be said that pneumonia has entered the sphere of public health medicine, and it is hoped that public health methods will be as effective in controlling this disease as they have been with such infections as diphtheria, typhoid fever and tuberculosis.

The Massachusetts state, New York city and New York state pneumonia control services have already published the results of some of their studies. The New York city<sup>9</sup> and the Massachusetts state<sup>10</sup> services have

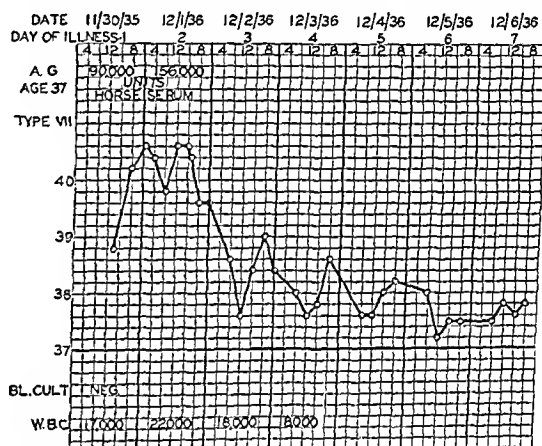


Chart 3.—Temperature curve, result of blood culture, and leukocyte count, case 3.

monia respond to serum. Certainly, the large experience with serum in the treatment of the most frequent types, together with the extensive experimental background, would lead one to predict that favorable results will be obtained with all types for which a potent serum can be produced.

Postoperative pneumonia in the past has been differentiated from so-called medical pneumonia. It has been considered "atypical pneumonia" or "group IV pneumonitis" and usually has been treated without bacteriologic study. It is true that in many cases it runs a mild course, but it is also true that postoperative pneumonia has a rather high fatality figure. With the thirty diagnostic serums it is now possible to discover the specific infecting organism in many cases. The prompt use of serum, it seems certain, will save lives and will also shorten the course and lessen the severity of the complication. Chart 6 shows an excellent clinical response with rabbit antipneumococcus serum of type XVII in a young woman in whom acute pneumonia developed after appendectomy.

The importance of type III pneumonia and the interest in the serum treatment of this very fatal disease seem

9. City of New York Department of Health Quarterly Bulletin 6: 58-60 (No. 2) 1938.

10. The Commonwealth, Boston, Massachusetts Department of Health, 1938.

to justify a brief report of our limited experience with rabbit antipneumococcus serum of type III. Because of the severe reactions produced by the concentrated product, it was not possible to make any sort of a trial until recently, when it finally became possible to refine and concentrate rabbit serum so that only occasional reactions occurred and a highly potent product could be utilized.

We have treated nine patients with type III concentrated rabbit serum, the last six having had no untoward reactions. Of the nine, three died and six recovered. Of those who recovered, one had a positive blood culture when serum treatment was instituted. Three were treated very early in the course of the disease and showed prompt response to a large unitage of serum. Chart 7 shows the course of an elderly patient, with definite signs and with an unfavorable outlook at the onset, who responded promptly to very early treatment with serum. Our experience is too meager to indicate any positive conclusions. However, our most recent results, together with the report of MacLeod and his associates,<sup>11</sup> who at the Rockefeller Institute Hospital have now treated fourteen patients with type III pneu-

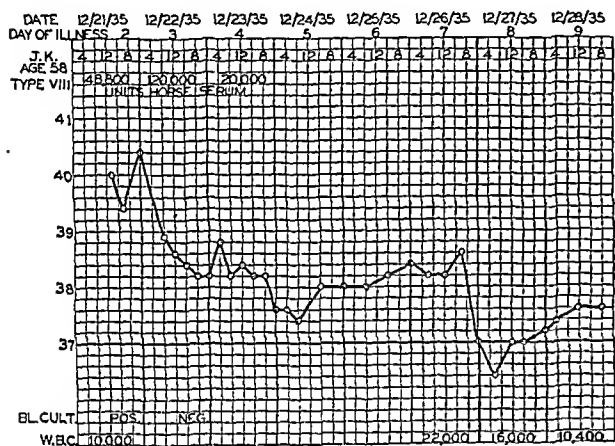


Chart 4.—Temperature curve, result of blood culture, and leukocyte count, case 4.

monia with four deaths, lead us to hope that with a serum high in antibody, given shortly after the onset, there will be definite favorable response.

Antipneumococcus rabbit serum has taken the focus of attention recently, but whether rabbit serum, unit for unit, is more effective than horse serum remains to be proved. Certainly with rabbit serum it is possible to obtain a preparation high in antibody against type III pneumococcus and against a few of the rare types for which no potent serum was possible with the horse product. Furthermore, it is possible to prepare rabbit serum against the rarer types more economically. However, with the types for which a potent horse serum has been available, in our experience the response with it has been just as satisfactory as that with the rabbit product. Early treatment shows striking results with both. Horsfall and his colleagues<sup>12</sup> at the Rockefeller Institute, in their most recent report on the use of rabbit antipneumococcus serum, presented fifty-four cases of nine types, excluding type III, with a mortality rate

of 3.7 per cent. Bennett<sup>13</sup> recently reported 100 cases of pneumonia of five types, not including type III, treated with rabbit serum, with a mortality rate of 7 per cent. Both of these reports are extremely encouraging but are based on a comparatively small series of cases. It is too early therefore to formulate any opinion as to the relative efficiency of the two serums.

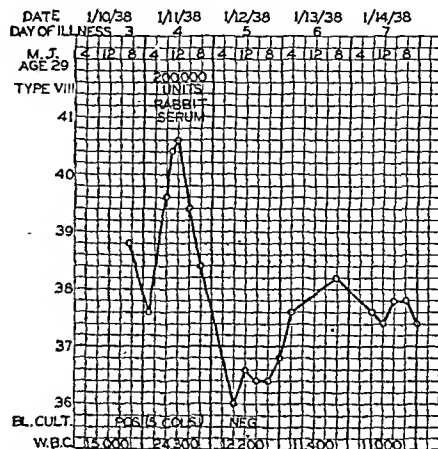


Chart 5.—Temperature curve, result of blood culture, and leukocyte count, case 5.

#### SUMMARY AND CONCLUSIONS

Pneumonia of the higher types is an important part of the pneumonia problem. In a collected series of 6,545 cases of pneumococcal pneumonia, over 50 per cent of the cases were of the higher types, 30 per cent being of types IV, V, VII, VIII and XIV.

Antipneumococcus serum was used in 111 cases, with a rather marked clinical response and an appreciable effect on the mortality rate for the combined series of cases of pneumonia of types IV, V, VII, VIII and XIV. At present there are available refined and concentrated preparations of horse and of rabbit serum that are

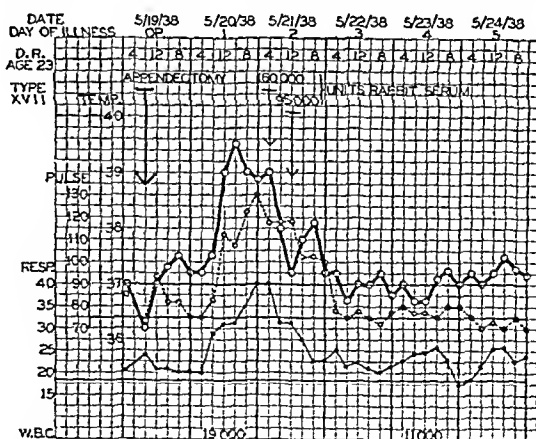


Chart 6.—Curves for temperature, pulse rate, respiratory rate and leukocyte count, case 6.

high in antibody content and almost entirely free from reaction-causing substance. With such products the prospects are excellent for obtaining increasingly better results in the treatment of all types of pneumococcal pneumonia.

11. MacLeod, Colin M.: Report Given Before the American College of Physicians in New York City in April 1938.

12. Horsfall, Frank L., Jr.; Goodner, Kenneth, and MacLeod, Colin M.: Antipneumococcus Rabbit Serum as a Therapeutic Agent in Lobar Pneumonia: II. Additional Observations in Pneumococcus Pneumonias of Nine Different Types, New York State J. Med. 38: 245-255 (Feb. 15) 1938.

13. Bennett, Richard H.: To be published.

## REPORT OF CASES

CASE 1 (chart 1).—The sputum of J. H., a woman aged 45, admitted to New York Hospital on the third day of her illness, showed type IV pneumococci. Blood taken on admission showed a positive culture in the broth and a negative culture on the agar plate. On the day following admission, before treatment with serum was instituted, the blood culture was again positive. On that day, the fourth day of illness, after the routine tests for sensitivity, 192,000 units of concentrated type IV horse serum was administered intravenously. Early the following day 104,000 units of the same preparation was given. A total of 296,000 units was given in a twenty-eight hour period in seven injections without any reaction. The blood culture on the fifth day was negative. The temperature dropped to slightly above normal on that day, and from that time the patient made an uneventful recovery. This patient received nearly 300,000 units of serum because of the severity of the toxemia, the bacteremia and the tardiness of the treatment.

CASE 2 (chart 2).—The sputum of F. G., a man aged 41, admitted to New York Hospital seventeen hours after an acute onset, showed type VII pneumococci. A culture of blood taken on admission was positive. On the first day, because of particularly severe toxemia and because of almost complete involvement of the right lung, the patient received 213,200 units of type VII horse antibody. The following day, because the temperature was still elevated and the blood culture was reported positive, 210,000 units more was administered. After this

day with 200,000 units of rabbit serum. Moderate chills occurred after three of the eight injections. The abrupt drop in the temperature was probably accentuated by the thermal reaction to the serum. The blood culture was sterile on the day after the serum was given. The convalescence was rapid.

CASE 6<sup>14</sup> (chart 6).—D. R., a woman aged 23, showed symptoms of pneumonia twenty-four hours after appendectomy. She had signs of consolidation of the left lower lobe and a leukocyte count of 19,000. The sputum showed a pure culture of type XVII pneumococci. Treatment with concentrated rabbit anti-pneumococcus serum of type XVII was instituted six hours after the onset of acute respiratory symptoms. The patient received 255,000 units intravenously within twelve hours without any untoward reactions. The temperature and the pulse and respiratory rates dropped promptly. The recovery from pneumonia was rapid. A large amount of serum was given on account of the preceding operation and the acute toxemia and because this was our first experience with type XVII serum.

CASE 7<sup>15</sup> (chart 7).—The sputum of C. A. G., a man aged 72, showed type III pneumococci. Signs of consolidation of the right lower lobe developed. Treatment with type III concentrated rabbit serum was instituted twelve hours after onset, and 218,300 units was given in a twenty-four hour period in six injections without any reactions. The temperature dropped, and the symptoms of toxemia subsided promptly.

## ABSTRACT OF DISCUSSION

DR. E. L. BORTZ, Philadelphia: The treatment of types I and II pneumococcus pneumonia has proved the value of specific therapy so completely that it is generally accepted now as the standard procedure by all investigators in this field. Because of the importance of early diagnosis, pneumonia should be regarded as one of the great medical emergencies. In Pennsylvania the mortality rate from pneumonia is ten times that from appendicitis. The prevalence of types I and II caused attention first to be centered on these. Now that specific treatment for these two types has proved effective, it is logical to study its utility in the so-called rarer forms. The only way to determine the frequency of occurrence of the various types of pneumonia is to make a bacteriologic diagnosis on every patient suspected or afflicted. The Neufeld method of typing is so simple that technicians can readily determine the disease. Indeed, interns in many hospitals do their own typing. To ascertain the frequency of occurrence of all types it is necessary to test the specimen not only for organisms of types I and II but for organisms of the other twenty-eight types as well. Cooperation of doctors and health authorities is essential if pneumonia is to be brought under control. The nature of the problem lends itself to an approach on a broad geographic plan. In Pennsylvania 131 typing centers have been set up by Dr. Edith McBride Dexter, state secretary of health, where diagnostic facilities are available to doctors twenty-four hours a day. We hope to find out much about the various types of pneumococci, especially as to their occurrence. Then we want to watch their fluctuations from time to time. The treatment of the higher types will adjust itself along established lines. In Pennsylvania, serum treatment for types I, II, V, VII, VIII and XIV is beyond the experimental stage; we have therefore made these type serums available to every doctor in the state. But before he can get the serum he must first have made a bacteriologic examination. Through the generous assistance of one of the large pharmaceutical houses, treatment serums for other types has been furnished to certain clinicians in Pennsylvania for further investigation. It appears that except for type III, and even with this type in patients under 45 years of age, specific serum therapy gives some success in treating the rarer types.

DR. BYRON F. FRANCIS, Seattle: Dr. Plummer's paper is important. We who work in smaller places must depend on such controlled statistical studies in order to evaluate the effectiveness of any therapeutic procedure. However, if the physicians and hospitals of smaller communities were organized

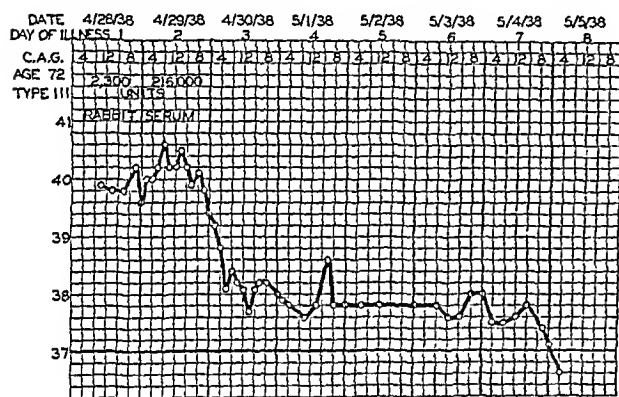


Chart 7.—Temperature curve, case 7.

intensive treatment the blood culture became negative and the toxemia subsided. The convalescence was uncomplicated except for mild serum sickness.

CASE 3 (chart 3).—The sputum of A. G., a woman aged 37, admitted to New York Hospital four hours after an acute onset, showed type VII pneumococci. A blood culture was negative. On account of acute toxemia, extensive signs in the left lung and a very high leukocyte count on the second day, 240,000 units of type VII horse serum was given. The temperature showed a critical drop, and recovery was prompt except for mild serum sickness. Since treatment was begun early and the disease was uncomplicated, the patient probably received more serum than was necessary.

CASE 4 (chart 4).—The sputum of J. K., a man aged 58, admitted to New York Hospital on the second day of acute illness, showed type VIII pneumococci. A culture of blood taken on admission was positive. The patient received 188,800 units of concentrated type VIII horse serum within thirty-six hours. There were no immediate reactions. The toxemia subsided promptly. The convalescence was uncomplicated except for serum sickness, which became acute on the seventh day, causing a temporary elevation in temperature and leukocyte count.

CASE 5 (chart 5).—The sputum of M. J., a man aged 29, admitted to New York Hospital on the third day of acute illness, showed type VIII pneumococci. Blood taken on admission showed a positive culture in the broth and showed five colonies on the plate. The patient was treated on the fourth

14. Permission to report this case was given by Dr. W. H. Lohman, Brooklyn.

15. Permission to report this case was given by Dr. S. A. Garlan, New York.

to pool their individual experiences it might be possible to compile useful information of this sort. Clinical impressions are likely to be unreliable. The idea has prevailed that pneumonia is a relatively benign disease in the Pacific Coast region and that lobar pneumonia takes an atypical course. However, the few available series from this region which have been studied do not confirm this impression. When the course of pneumococcal pneumonia is carefully studied clinically and roentgenologically in a large number of cases, one finds that a great percentage do not conform to the classic picture of lobar pneumonia. The disease apparently takes a greater variety of clinical forms than was previously realized. The pneumonias should be classified on a bacteriologic and immunologic basis rather than according to the anatomic form. Correct typing is important but sometimes difficult, especially when material for typing is scanty. The typing should be checked frequently, especially if the expected response to serum is not obtained or the first reaction reveals one of the so-called carrier types. The agglutination test has been useful for determining when the administration of serum should be discontinued. If a positive agglutination test is obtained with undiluted serum, one may assume that an overabundance of antibodies is present.

DR. PHILIP G. CORLISS, Somerton, Ariz.: I practice in a small town near Yuma, Ariz., and am probably representative of the physicians of the small towns. We work under a disadvantage because the people are poor. It is an agricultural community, and the serum is very expensive. In the past two years I have treated every case with serum and have not lost a case. My experience with the higher types has been limited almost exclusively to type VII. I want to ask a question as to the amount of serum to be given in a case. Dr. Blankenhorn stated that he never gave more than 200,000 or 300,000 units. I had a case of type VII which I believe we would have lost if we stopped at 300,000. We pulled the patient through with 420,000. I want to ask Dr. Plummer about mixed infections. He has not mentioned any cases of mixed types. I have had two cases of type VII. In one case, type VII and type I pneumococci were found; in the other case of type VII also type II pneumococci was found. Both responded favorably to the serum.

DR. WILLIAM C. BRUFF, Whittier, Calif.: In the Los Angeles General Hospital we have been using serum for several years. I wish to make one point with regard to the use of the agglutination test as a test of adequate treatment. My impression is that we might as well throw that test out. We have seen, in spite of the presence of complete agglutination, the disease spread to new lobes and the patient go downhill and die. We have repeatedly seen good recovery, clinically, in the absence of any agglutination. I think one is much safer to follow the clinical signs and continue the serum until there has been a good drop in pulse and temperature or until one has exhausted one's resources of serum and have given up. I should like to ask what the author considers the limit of serum dosage in late and unfavorable cases. How far would he go in giving serum?

DR. NORMAN H. PLUMMER, New York: Since pneumonia has entered the field of public health medicine, a great deal has been accomplished. The cost of serum has always presented a serious problem. Now serum is being furnished by some of the states, making it possible to treat the patients with adequate amounts. In the states of New York and Massachusetts, comprehensive pneumonia control programs have been established. A question was asked regarding the dosage of serum in pneumonia. I agree that the clinical course is still the best guide to dosage. I have used both the slide agglutination test described by Sabin and the carbohydrate cutaneous test of Francis. Of the two, the Francis test has been found to be more satisfactory. Regarding the question of complications: In my experience complications have occurred with about the same relative incidence in the cases treated with serum as in the cases treated without serum. A mixed pneumococcal infection is occasionally discovered. Such a case usually shows one of the carrier types in addition to the infecting type. For example, if sputum shows type I and type VIII pneumococci, it can be assumed that the type I is the infecting organism and that the type VIII is a carrier

organism. The actual infection may be caused by more than one type, but the usual relationship of these organisms is the one already cited. In the cases of type III pneumonia presented in my paper, serum alone was used. In a smaller number of cases in which sulfanilamide alone was used, it was not possible to note beneficial clinical effect. Since seeing Dr. Osgood's demonstration of the bone-marrow culture medium, in which the combination of specific serum and sulfanilamide has such a striking effect on the pneumococcus, I am anxious to determine what clinical effect this combination will have. The following question has been asked: Some of the thoracic surgeons are treating pneumonia by position, sometimes standing the patient on his head, sometimes laying him on one side and then on the other, and sometimes changing his position three or four times daily. They claim that almost all pneumonias are due to a collapse of the lobe of the lung. Do you use the positions? In reply I would say No, I do not emphasize posture. My experience with postoperative pneumonia has indicated that most cases are cases of pneumococcal pneumonia and that they should be given the benefit of serum. I do not entirely subscribe to the idea that they are cases of atelectasis. They should be treated as pneumonia.

## Clinical Notes, Suggestions and New Instruments

### TRAUMATIC APPENDICITIS

C. M. BURGESS, M.D., HONOLULU, HAWAII

It is generally conceded, at least by industrial surgeons and insurance companies, that appendicitis of traumatic origin is a disease entity. Of course it is impossible to prove in the laboratory or by any other means that in a certain case acute appendicitis is traumatic in origin. However, in going over closely the history and clinical course of many cases reported in the literature as instances of traumatic appendicitis, one must admit that coincidence alone would be overtaxed to explain the phenomenon.

This case is not reported with the intention of either supporting or denying the existence of traumatic appendicitis. Most authorities will admit that trauma may be a contributing factor in the production of acute appendicitis in a previously diseased appendix. Since no organ in the body is immune to injury, no matter how deeply seated, it is not logical to say that appendicitis on a traumatic basis cannot occur in a previously normal appendix.

No attempt will be made in this report to review the literature on traumatic appendicitis. That has been so ably done recently by Maes and McFetridge<sup>1</sup> and by Slutkin and Wetzler<sup>2</sup> that further comment would be repetition. However, reading of the literature makes one thing apparent. For the cases reported as instances of traumatic appendicitis the mortality rate is extremely high. In Kelly's<sup>3</sup> series of fifty cases it was 50 per cent; thirty-seven of the appendixes had ruptured or were gangrenous. In sixteen of the twenty-five fatal cases appendical involvement was unrecognized. In all subsequent series of cases the proportion is about the same.

Traumatic appendicitis is so rare that no one has a large series or becomes proficient in its care. But by physicians bearing the possibility of its existence in mind perhaps the mortality and morbidity of the disease process can be lessened.

The mechanism of traumatic appendicitis has not been satisfactorily explained. Gangrene and rupture predominate as a pathologic process, but no differentiation can be made from stained sections. The diagnosis must be made from the history and clinical course. The weight of opinion would indicate that the condition is due to a sudden change in intra-abdominal pressure which causes an influx of cecal contents past a narrowed

1. Maes, Urban, and McFetridge, R. M.: Traumatic Appendicitis, *Am. J. Surg.* 30: 478-482 (Dec.) 1935.  
2. Slutkin, M. W., and Wetzler, S. H.: Traumatic Appendicitis, *Am. J. Surg.* 31: 514-520 (March) 1936.  
3. Kelly, H. A., and Hurdon, E.: Vermiform Appendix and Its Diseases, Philadelphia, W. B. Saunders Company, 1935.

portion of the appendical lumen. The distention and subsequent edema cause complete obstruction. Ultimate destruction results from rapid bacterial growth.

The patient, a man aged 46, a Hawaiian, was first seen about 10 a. m. May 21, 1937. Physical examination revealed that he was very well developed and well nourished and apparently in considerable pain. The right lower quadrant was extremely tender and rigid. The temperature was 101 F., the pulse rate 88 and the respiratory rate 23. The white blood cell count was 22,000, with 88 per cent polymorphonuclears. A diagnosis of acute appendicitis was made, and at operation a ruptured appendix found. The history is of great interest. For the previous two weeks the patient had been using a pneumatic drill to raise the ceiling of a tunnel through stone. This drill was suspended from the ceiling by means of a strap. To exert pressure he rested the butt of the drill in his right iliac fossa. About 10 a. m. May 20, 1937, while drilling, he suddenly had a pain in the right lower quadrant so severe that it doubled him up and prostrated him on the floor. This lasted several minutes, and, although it then became less severe, it prevented further use of the drill in the former position. A dull pain persisted until the next morning, when at work it became so severe that he was sent to a physician. There was no previous history of pain in the right lower quadrant.

The observations at operation were unusual. The cecum was attached unusually far toward the midline. The appendix was ruptured in such a way that the tip was amputated. It lay to the right of the cecum, sharply kinked upward at the base and directly over the psoas muscle. It was tightly bound to the posterior part of the parietal peritoneum by old tough adhesions at the region of the sharp kink upward. The peritoneum was drained. Convalescence was uneventful. Compensation was allowed.

This case seems to fulfil all the requirements necessary for the diagnosis of traumatic appendicitis. It is presented because of its rarity and because physicians cannot keep too much in mind a condition so high in mortality and morbidity.

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#### INDUCED MALARIA IN A PATIENT WITHOUT A SPLEEN

REPORT OF A CASE

G. S. INGALLS, M.D., CINCINNATI

A patient was referred to the Cincinnati General Hospital for treatment of dementia paralytica with malaria. Familial hemolytic jaundice was a coexisting disease, which complicated the usual procedure. The existing moderately severe anemia was a contraindication to immediate inoculation with malaria. Splenectomy was therefore considered proper, so that the factor responsible for the excessive destruction of red blood cells could be removed.

The constant finding of splenomegaly in malaria suggested that some change might result in the reaction to malaria if the spleen were absent.

A review of the literature elicited no account of the course of this disease in a splenectomized subject. It was decided, therefore, to make certain clinical and laboratory observations on the course of induced malaria in this patient after splenectomy.

#### REPORT OF CASE

*History.*—D. H., a native-born American woman aged 31, a housewife, was admitted to the hospital July 23, 1937, after convulsions and transient attacks of hemiplegia.

The patient was in good health until 1933, when her skin became pale and faintly yellow. She lost strength and weight and was bedridden when a physician was called. His examination revealed a moderately enlarged spleen, 1,110,000 red blood cells, slightly increased fragility of the red cells and a strongly positive Wassermann reaction of the blood. Arsenical therapy for syphilis caused nausea and vomiting. The patient had been given approximately 500 intramuscular injections of a soluble

bismuth preparation during a three year period previous to her admission to this hospital. On Jan. 1, 1937, the patient began having epileptiform convulsions, followed by hemiplegia and aphasia lasting from two to three weeks. Potassium iodide and a bismuth compound were given rigorously during these episodes. Several similar attacks occurred before admission, and the last one was associated with increased jaundice. The patient's only complaint on entering the hospital was of a vague epigastric discomfort. Her mother and brother have familial hemolytic jaundice.

*Examination.*—On admission the patient was fairly well developed and nourished, anemic and not acutely ill. The temperature was 100.6 F., the pulse rate 106 and the respiratory rate 26. The blood pressure was 120 systolic, 68 diastolic. She weighed 96 pounds (43.5 Kg.). The scleras were slightly icteric. The pupils were regular and equal and responded actively to light and in accommodation. There were fine tremors of the lips and tongue. The speech was slurred and dysarthric. A firm, rounded, nontender spleen extended 6 cm. below the left costal margin. On deep inspiration the liver edge descended 4 cm. below the right costal margin. Soft, discrete, freely movable lymph glands the size of small peas were palpated in the groins, axillas and epitrochlear fossae. There were hyperactive deep reflexes and positive Hoffmann and Babinski signs bilaterally.

Laboratory examinations revealed a hemoglobin content of 60 per cent, 2,760,000 red blood cells, 9,500 white blood cells; neutrophils 74 per cent, lymphocytes 23 per cent, eosinophils 1 per cent, monocytes 2 per cent and reticulocytes 2.2 per cent. The bleeding time was two minutes and the clotting time five minutes. Clot retraction was complete within two hours. The fragility test of the red blood cells revealed that hemolysis began at 0.42 per cent saline and was complete at 0.34 per cent saline. The icteric index was 17.5. Total serum protein was 7.1 Gm. per hundred cubic centimeters. The blood uric acid was 4.2 mg. per hundred cubic centimeters. The Wassermann reaction of the blood was strongly positive. The cerebrospinal fluid was clear and colorless, was under 120 mm. pressure, gave a 2 plus Pandy reaction, showed 15 lymphocytes per cubic millimeter and gave a strongly positive Wassermann reaction and a colloidal gold curve of 5555543200. Urinalyses and stool examinations gave essentially negative results.

*Mental Status:* Friends and relatives had noticed no personality change. The patient was well kept and neat and spoke coherently. Her attention was easily held and she cooperated well. The dominant mood was cheerfulness, but she was unstable emotionally and cried easily. There were no delusions, illusions or hallucinations. Her fund of information, ability to calculate and judgment were moderately impaired. Memory for recent events was slightly defective. Her sexual desire was diminished.

A diagnosis of dementia paralytica and familial hemolytic jaundice was made. The patient was given a general diet and iron and ammonium citrates, 1 drachm (4 Gm.) three times a day. At the end of the second week the red blood cells had risen to 3,700,000. She was transferred to the surgical service and there was given 500 cc. of citrated blood intravenously before splenectomy was done. Operation and convalescence were uneventful.

After her return to the psychiatric ward her physical condition steadily improved. The fragility test revealed that hemolysis began at 0.55 per cent saline and was complete at 0.32 per cent saline. Serum carbon dioxide was 58.5 volumes per cent. Serum chlorides were 100.5 milliequivalents per liter. Whole blood inorganic phosphorus was 4 mg. per hundred cubic centimeters. The patient received intravenous and intramuscular injections of blood from a patient with benign tertian malaria. Two days later the temperature, pulse rate and respiratory rate rose sharply to 102 F., 128 and 26, respectively. These elevations persisted, the values reaching 105.4 F., 134 and 30 before returning to normal at the end of seven days. Three days later a similar episode occurred, lasting five days. The temperature, pulse rate and respiratory rate reached 103.4 F., 120 and 30 and gradually fell to 99 F., 88 and 24. The white blood cells varied between 8,200 and 11,200. Urinalyses gave



negative results. Blood culture was negative. The Widal test was negative. Agglutination with *Bacillus melitensis* was negative. The Weil-Felix reaction was positive in a dilution of 1:320 and remained so during the patient's course in the hospital.

The patient had no complaints, and her physical condition was clinically unchanged from that on admission. On the sixteenth day after inoculation she began having paroxysms of chills and fever. A characteristic chill would be anticipated by the patient about one hour before its climax. She complained of malaise, chilliness and shivering. These merged into severe rigors and trembling. Her skin became ashen and her lips and nail beds cyanotic. The blood pressure was 100/80 and fell to 90/60 at the end of the chill. The pulse was rapid, full and bounding. The chills lasted from thirty to fifty minutes and were followed by a temperature, pulse rate and respiratory rate of 104.6 F., 120 and 24, which levels were maintained for from four to five hours, falling gradually to 99.2 F., 100 and 26 at the end of twelve hours. *Plasmodium vivax* was identified in the blood stream on the third day after the first chill.

At the height of the third chill, the following laboratory observations were noted: icteric index 18, blood sugar 79 mg. per hundred cubic centimeters, serum protein 5.7 Gm., urea nitrogen 15 mg., serum chlorides 98 milliequivalents per liter, serum carbon dioxide 57 volumes per cent, reticulocytes 4.2 per cent, red blood cells 3,660,000, whole blood inorganic phosphorus 3.4 mg. per hundred cubic centimeters and serum cholesterol 92 mg.

The paroxysms of chills and fever occurred daily, and the patient became listless and apathetic. She lost her appetite, perspired profusely during the defervescence of fever and was occasionally incontinent of urine. On the day of the sixth chill the patient was weak, her skin was pale and icteric and she complained bitterly of the increasingly severe rigors. The pulse was rapid and of small volume. The liver extended 4 cm. below the costal margin and the lymph glands were soft, nontender and discrete and enlarged to the size of beans. Red blood cells numbered 3,220,000, hemoglobin content was 65 per cent, white blood cells numbered 17,150: neutrophils 44 per cent, lymphocytes 32 per cent, monocytes 4 per cent. The icteric index was 18. Urinalysis gave negative results. She was given quinine sulfate, 15 grains (1 Gm.) every four hours for three doses, then 10 grains (0.65 Gm.) daily for sixteen days, together with reduced iron 10 grains three times a day. The chills stopped immediately. The parasites disappeared from the blood stream within three days, the liver edge receded to the rib margin and the lymph glands became smaller and firm. She no longer complained of the extreme feeling of weakness and helplessness present during the course of the chills. After six days of antimalaria therapy, the red blood cells dropped to 2,450,000 and the white blood cells rose to 18,150: neutrophils 38 per cent, lymphocytes 55 per cent, monocytes 4 per cent, eosinophils 2 per cent, and basophils 1 per cent. During the next eighteen days the blood picture rapidly changed to red cells 3,850,000, white cells 9,550, neutrophils 55 per cent, lymphocytes 41 per cent, monocytes 2 per cent, basophils 1 per cent, and reticulocytes 0.8 per cent. Serum cholesterol had risen to 138 mg. per hundred cubic centimeters, and blood sugar to 83 mg.; the urea nitrogen was 8 mg.

The patient gained weight and strength. Her emotional state was stable and cheerful and her responses were spontaneous. She could calculate with greater ease and accuracy, although her judgment remained somewhat impaired.

Injections of tryparsamide and bismuth salicylate were begun, and the patient was discharged one month after the onset of chills.

#### SUMMARY AND CONCLUSIONS

In general, with the exception of the occurrence of the early sustained fever, this patient reacted as does the usual patient with malaria. Interesting features in our case were:

1. Generalized lymphadenopathy, enlarged liver and absolute lymphocytosis during the course of paroxysms of chills and fever.
2. Failure of the blood sugar level to drop during a paroxysm.

3. A low blood cholesterol level during the paroxysms.
4. Prompt response of the malarial infection to quinine.
5. Atypical febrile episodes occurring before the onset of chills and the appearance of parasites in the blood stream.
6. A positive Weil-Felix reaction in high dilution.
7. The laboratory observations are presented without an attempt to interpret them.

This patient's course suggests that:

1. The absence of the spleen is no contraindication to the treatment of dementia paralytica with malaria.
2. It is probable that in cases of malaria in which the spleen is absent the lymphatic system compensates for whatever function that organ may have.

#### TRICHINOSIS: REPORT OF TRICHINAE IN VOCAL CORDS OF A PATIENT WITH DIPHTHERIA

ARCHIBALD L. HOYNE, M.D., AND A. A. WOLF, M.D., CHICAGO

From the literature it is evident that trichinosis occurs much more frequently than is generally supposed. It has been reported that on routine postmortem examination of several thousand diaphragms an incidence of trichinosis was found varying in different series from 13.6 per cent<sup>1</sup> to 17.5 per cent<sup>2</sup> and even as high as 28 per cent.<sup>3</sup> Some believe the explanation for these figures lies in the fact that from 3 to 6 per cent of hogs are infected with trichinae.<sup>4</sup>

*Trichinella spiralis* belongs to the family of Nematelminthes or roundworms and enters the human body in raw or inadequately cooked pork. The gastric juices dissolve the protective capsule of the larvae and free the worm, allowing the latter to pass into the small intestine, where coitus occurs. The female then burrows under the surface of the intestinal mucosa and deposits viviparous young in the lymphatic and vascular structures.<sup>5</sup> The larvae arrive at their destination in about nine days and encyst when they reach striped muscle. The capsule alone or the capsule and worm may then become calcified.<sup>6</sup>

Trichinae have been found in the spinal fluid,<sup>7</sup> mesenteric lymph nodes, lungs, heart, pancreas,<sup>8</sup> brain,<sup>9</sup> gallbladder,<sup>10</sup> placenta, milk of nursing mothers, pleural effusion and retina.

The symptoms produced follow the cycle of the worm:

1. Period of invasion of host or that period wherein the worms develop to maturity in the intestine. Gastrointestinal manifestations such as nausea, vomiting, diarrhea and abdominal pain occur at the end of the first week.
2. Period of dissemination of larvae or that period when the larvae are carried into the blood stream and lymphatics to become embedded in the striped muscle. There occurs then muscle tenderness, edema about the eyes and eosinophilia, this being at the end of the second week.
3. Period of encystment, which is the convalescent period in mild cases but in overwhelming infections marked edema of the face, severe cachexia, delirium and coma are produced.

From the Contagious Disease and Pediatric departments, Cook County Hospital.

1. Hall, M. C., and Collins, D. J.: Incidence of Trichinosis as Indicated by Postmortem Examination of 300 Diaphragms, *Pub. Health Rep.* 52: 468-490 (April 16) 1937; Some Correlations and Implications in Connection with the Incidence of Trichinae Found in 300 Diaphragms, *ibid.* 52: 512-527 (April 23) 1937.

2. Queen, F. B.: The Prevalence of Human Infections with *Trichinella Spiralis*, *J. Parasitol.* 18: 128 (Dec.) 1931.

3. Riley, W. A., and Scheffey, C. H.: Trichinosis of Man a Common Infection, *J. A. M. A.* 102: 1217-1218 (April 14) 1934.

4. Magath, T. B.: Encysted Trichinae, *J. A. M. A.* 108: 1964-1967 (June 5) 1937. Hall, M. C.: The Complex Clinical Picture of Trichinosis and the Diagnosis of the Disease, *Pub. Health Rep.* 52: 539-551 (April 30) 1937.

5. Spink, W. W., and Augustine, D. L.: Diagnosis with Specific Reference to Skin and Precipitin Tests, *J. A. M. A.* 104: 1801-1805 (May 18) 1935.

6. Faust, E. C.: Human Helminthology, Philadelphia, Lea & Febiger, 1929.

7. Van Cott, J. M., and Lintz, William: Trichinosis, *J. A. M. A.* 62: 680 (Feb. 28) 1914.

8. Frothingham, Channing: Lesions Caused by *Trichina Spiralis* in Man, *J. M. Research* 15: 483, 1906.

9. Hassin, G. B., and Diamond, I. B.: Trichinosis Encephalitis, *Arch. Neurol. & Psychiat.* 15: 34 (Jan.) 1936.

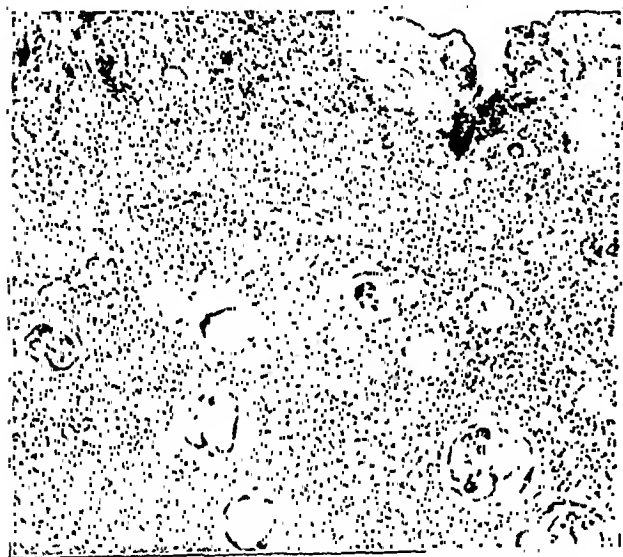
10. Horlick, S. S., and Bicknell, R. E.: Trichinosis with a Widespread Infestation of Many Tissues, *New England J. Med.* 20: 816 (Oct. 24) 1929.

The cardinal points in diagnosis are (1) history of eating raw pork, underdone pork or pork products, (2) gastrointestinal disturbances, (3) eosinophilia, (4) edema, usually suborbital, (5) high fever, (6) myositis and (7) myalgia.

The means of establishing the diagnosis are (1) biopsy, (2) examinations of the stool, blood and cerebrospinal fluid, (3) precipitation test and (4) the intradermal test. Of these, the Bachman intradermal test has proved of considerable value. It consists of a dried extract of the larvae diluted in a buffered saline solution. It is an intradermal test using 0.1 cc. of a 1:10,000 dilution and is read in from five to twenty minutes. A positive reaction raises a wheal of at least 7 mm. in diameter and a zone of erythema not less than 20 mm. in diameter. In about 90 per cent of persons a positive reaction develops in from two to four weeks after the onset of infection.<sup>11</sup>

Trichinosis is uncommon in children because their gastric juices fail to dissolve the capsules of the larvae as occurs in adults. This explains why the larvae usually pass through the intestinal tract without causing infection and are excreted.

There have been recorded seventy-four cases of trichinosis in children, but we have found only three articles summarizing eleven cases in pediatric journals.<sup>12</sup> The clinical entity of



Trichinae in vocal cord (courtesy of R. H. Jaffé); reduced from a photomicrograph with a magnification of 100 diameters.

trichinosis has been regarded lightly in didactic considerations at medical schools and is seldom considered in a differential diagnosis in hospital wards for children.

Twenty years ago one of us observed a child about 3 years of age who was sent to the Contagious Disease Department of the Cook County Hospital with a diagnosis of epidemic meningitis. We found trichinae in the spinal fluid, a rare disclosure at that time. (This case was not reported.) Since then there has been no recognized case of trichinosis occurring in a child among patients in our contagious disease department until the one responsible for the following report:

#### REPORT OF CASE

**History.**—M. C., an infant Negress, aged 11 months, was admitted to the Cook County Hospital July 4, 1937. The family and social histories were unsatisfactory. It was said that there were other children living and well.

The child was a full term normal infant weighing 9 pounds (4,082 Gm.) at birth. She was artificially fed on whole boiled milk formula and received cod liver oil and orange juice.

11. McCoy, O. R.; Miller, J. J., and Friedlander, R. D.: The Use of and Intradermal Test in the Diagnosis of Trichiniasis, *J. Immunol.* 24: 1-23 (Jan.) 1933.  
12. Sokel, I. P.: Sporadic Trichinosis in Children, *Am. J. Dis. Child.* 51: 367-388 (Feb.) 1936. Carpenter, H. C.: Case of Trichinosis, *Tr. Am. Pediat. Soc.* 31: 184, 1919. Gordon, M. B.; Cares, Reuben, and Kaufman, Benjamin: Myocarditis and Encephalitis in a Fatal Case of Trichinosis, *J. Pediat.* 6: 667 (May) 1935.

Development was normal, the baby having sat up at 5 months and walked at 10 months. There was no history of immunization or of contact with a patient with an infectious disease.

About five days before admission to the Cook County Hospital the mother noted that the child appeared to have a slight cold. Two days later there seemed to be fever, and on that account the mother decided to bring the patient to the hospital.

**Examination.**—On admission the infant was acutely ill. The rectal temperature was 103.6 F., the pulse rate 160 and the respiratory rate 60. The patient was listless and dyspneic and had a respiratory stridor.

A white membrane seemed to cover the mucous membranes of the nose. The pharynx was reddened and a white exudate concealed the left tonsil. A few submaxillary glands were palpable.

The boundaries of the heart were within normal limits with tones normal but rapid. Throughout the lung fields bilaterally were heard distinct breath sounds and coarse musical rales.

The abdomen and genitalia were normal and no pathologic neurologic reflexes were present.

**Diagnostic Impressions and Possibilities.**—The gradual onset of the disease, the age of the child (11 months), the history of no immunization and the presence of a membrane made probable a diagnosis of nasotonsillar laryngeal diphtheria. A streptococcal laryngotracheal bronchitis was also considered.

**Clinical Course.**—Intubation was done with a 1-2 year tube, which passed into the glottis with a sense of obstruction in the larynx. Because no relief was afforded, the tube was withdrawn and a 2-4 year tube inserted. Again no improvement was noted and a Mosher tube ("life saver") was introduced. However, the child was not benefited. Twenty thousand units of diphtheria antitoxin was administered intramuscularly. Epinephrine and caffeine with sodium benzoate were given and additional insertions of the Mosher tube were made, but the child's condition grew progressively worse and she died seven hours after entering the hospital.

**Laboratory Studies.**—Culture of material taken from the nose and throat for Klebs-Loeffler bacillus proved to be positive. Unfortunately no differential blood count was made.

The diagnosis made at necropsy was (1) pseudomembranous pharyngitis and laryngitis (diphtheritic), (2) trichinosis of the vocal cords, (3) parenchymatous degeneration of the myocardium and slight sclerosis of the endocardium of the left ventricle, (4) parenchymatous degeneration of the liver and kidneys, (5) focal bronchial pneumonia of the left lower pulmonary lobe and (6) moderate hyperplasia of the spleen.

Through the courtesy of the late Dr. Richard H. Jaffé, who performed the necropsy, we secured the accompanying photomicrograph. It shows a section of vocal cord in which trichinae are plainly visible.

#### COMMENT

We have reported this case for the following reasons: 1. As far as we know this is the first recorded instance of trichinae being found in the vocal cords. 2. Trichinosis occurs infrequently in children. 3. Diphtheria involving the larynx presented an unusual combination of conditions.

25 East Washington Street.

**The Birth of Aesculapius.**—It was above Epidaurus, on Mount Titthion, as we have seen, that Aesculapius was born, the son of the god Apollo and a maiden named Coronis. According to one legend, the young mother left her baby in the care of a shepherd and went off with a mortal man, at which Apollo was angry and gave the little boy to the centaur Cheiron to bring up and educate as a physician. Soon the child became so expert in healing human ills that he even brought the dead to life. This so maddened Zeus and Pluto that they conspired to kill Aesculapius. Again Apollo saved him, and when he was of age he married Epione, by whom he had several children, all doctors. Homer merely mentions the sons of Aesculapius as healing the battle wounds at Troy, but his daughters' names, Hygeia and Panacea, have become household words for the prevention of sickness.—Hurd-Mead, Kate Campbell: *A History of Women in Medicine*, Haddam, Conn., the Haddam Press, 1933.

## Special Article

### THE HUMAN REQUIREMENT OF VITAMIN D

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*This article and others recently published or to be published comprise a new series on the present status of our knowledge of the vitamins. They have been prepared under the general auspices of the Council on Pharmacy and Chemistry and the Council on Foods. The opinions expressed are those of the authors and not necessarily the opinions of either council. Reprints are not available but the articles will be published later in book form.—Ed.*

For many persons some vitamin D in addition to that ordinarily obtained by exposure to sunshine is necessary for the most efficient utilization of calcium and phosphorus. The vitamin acts by increasing the amounts of these substances available for the mineralization of bones and teeth. Measurement of the requirement of vitamin D presupposes the ingestion of a diet adequate in all other respects and particularly containing ample amounts of calcium and phosphorus; it should include also recognition that the human requirement of vitamin D (or of any other nutritional factor) includes both the quantity necessary to prevent obvious clinical pathologic changes and an amount which promotes a condition of normal nutrition and health.

The requirements of vitamin D may be defined as those amounts which, with ample intakes of calcium and phosphorus and a diet otherwise adequate, insure sufficient retention of calcium and phosphorus to permit (a) normal growth and mineralization of the skeleton and teeth of infants and children, (b) maintenance of bony and dental structures during adult life and (c) a sufficient supply for mother and infant during pregnancy and lactation.

Unfortunately no one yet knows the normal rate of growth of children. Instead, there are available only many average rates of growth under widely varying conditions of nutrition. It is known from studies of racial food habits that when the diet of a people is nutritionally good and includes a plethora of milk and ingested vitamin D or its equivalent in sunlight the people of that race are tall and well formed, with well calcified skeletons and freedom from dental caries.<sup>1</sup> On the other hand, peoples whose mineral or vitamin D intake is very low are small of stature and prone to be subject to rickets or osteomalacia.<sup>2</sup> Even in this country, children from better class homes are taller and heavier than children of poor families,<sup>3</sup> and children from better class homes of today are taller than those of the same class a generation or so ago.<sup>4</sup> One may

postulate, therefore, that "average" rates of growth of today still represent suboptimal rather than optimal skeletal growth, so that, if linear growth is used as a criterion of adequacy of vitamin D intake, the rate should be at least "average."

During childhood and adolescence, not only does the skeleton grow in size but a part of its water content is replaced by inorganic salts. The rate of replacement is not known with certainty but is most rapid in early life. Because of the variability of standards of growth and mineralization of the skeleton, the optimal amounts of calcium and phosphorus to be retained at any age are not known. Various methods of calculating these requirements have appeared in the literature from time to time.<sup>5</sup> The required retentions estimated for calcium by the different investigators vary from 0.1 Gm. daily throughout childhood<sup>5a</sup> to a graded scale increasing from 0.3 Gm. daily at 1 year to 0.5 Gm. daily during adolescence.<sup>5c</sup> As improvement in nutrition has so far resulted in increased average stature, and as mineralization of the skeleton may lag far behind growth,<sup>6</sup> the higher figures are thought to be a safer guide.

The requirements of normal persons for only the ingested forms of vitamin D will be considered in the present discussion. The criteria commonly used are freedom from rickets or osteoporosis, good growth and development, normal values for serum calcium and phosphorus, ample retentions of these elements for growing individuals and "equilibrium" for those fully grown.

#### REQUIREMENT DURING INFANCY

*Infants Fed Cow's Milk.*—Studies of the vitamin D requirement during infancy may be divided into two groups. The larger group comprises studies planned to determine a minimal requirement using the prevention of rickets as the sole or chief criterion. Some of these include also the levels of serum calcium, phosphorus and phosphatase, and a few have taken into consideration the rates of growth. The smaller group comprises studies which include in addition to the preceding criteria quantitative determinations of the retention of calcium and phosphorus correlated with the rate of growth and the relative intakes of calcium and phosphorus. The emphasis in this group has been not on rickets prevention but on growth and development and on the fully adequate rather than the minimum requirement for vitamin D.

All these studies include periodic roentgen examination of the radius or tibia; in the first group of studies this constitutes the chief basis of judgment. Little agreement has been achieved in the interpretation of minor aberrations of growth at the epiphyseal line,<sup>7</sup> but much greater uniformity in the determination of rickets of "clinical significance." Use of only the latter criterion is necessary if comparisons are to be made between the various studies. Rickets prevention alone probably should not be considered as a criterion of an adequate vitamin D supply. It is at least reasonable to think that the optimum amount of any nutri-

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1. McCarrison, R.: Problems of Nutrition in India, Nutrition Abstr. & Rev. 2:1 (July) 1932. Orr, J. B., and Gilkes, J. L.: Physique and Health of Two African Tribes, Medical Research Council, Special Report Series, No. 155, London, His Majesty's Stationary Office, 1931. Ehrström, R.: Die Diät- und Kostführung der nördlichen Länder in historischer Beleuchtung, Acta med. Scandinav. 51:583 (fasc. V-VI) 1934.

2. Maxwell, J. P.: Osteomalacia and Diet, Nutrition Abstr. & Rev. 4:1 (July) 1934. Footnote 1.

3. Baldwin, B. T.: Physical Growth of Children from Birth to Maturity, University of Iowa Studies, Studies in Child Welfare 1, No. 1, June 1921. Gray, Horace, and Fraley, Frederick: Growth Standards: Height, Chest-Girth and Weight for Private School Boys, Am. J. Dis. Child. 32:554 (Oct.) 1926.

4. Gray, Horace: Increase in Stature of American Boys in the Last Fifty Years, J. A. M. A. 88:908 (March 19) 1927.

5. (a) White House Conference Reports: Growth and Development of the Child: III. Nutrition, New York, the Century Company, 1932, p. 196. (b) Sherman, H. C., and Hawley, E.: Calcium and Phosphorus Metabolism in Childhood, J. Biol. Chem. 53:375 (Aug.) 1922. (c) Leitch, I.: The Determination of the Calcium Requirements of Man, Nutrition Abstr. & Rev. 6:553 (Jan.) 1937.

6. (a) Todd, T. W.: Personal communication to the authors. (b) Sherman, H. C., and Campbell, H. L.: Growth and Reproduction on Simplified Food Supply: IV. Improvement in Nutrition Resulting from an Increased Proportion of Milk in the Diet, J. Biol. Chem. 60:5 (May) 1924.

7. (a) Jeans, P. C.: Vitamin D Milk, J. A. M. A. 106:2066 (June 13), 2150 (June 20) 1936. (b) Coley, T. B., and Reynolds, Lawrence: The Interpretation of X-Ray Films in the Diagnosis of Rickets, J. Pediat. 10:743 (June) 1937.

tional essential is somewhat greater than the amount which barely prevents clinical pathologic changes.

The determination of calcium and inorganic phosphorus of blood serum has a definite but limited usefulness in estimating the vitamin D requirement. In general, rickets cannot develop concurrently with a continuously normal level. The amounts of vitamin D that barely prevent rickets produce serum values within the range considered normal. However, values of this magnitude give little indication as to whether the calcium balance is weakly or strongly positive; it may even be negative. Perhaps one should distinguish between low and high normal levels. When the amount of vitamin D is considered fully adequate, the serum calcium and phosphorus levels then would be in the upper part of the normal range, whereas with amounts of vitamin D considered inadequate the serum values would be at the lower limits of normal.

The rate of growth is an important factor in determining the vitamin D requirement. Since rickets is a condition the severity of which tends to increase with increasing rates of growth, it is more important to prove that rickets has been prevented in a rapidly growing than in a slowly growing infant. Evidence is available also that the rate of growth is increased above the average when the intake of vitamin D is fully adequate.<sup>8</sup>

The most useful criterion of the vitamin D requirements is provided by studies of the utilization of calcium and phosphorus. Observations on the retention of these minerals permit a direct evaluation of the efficiency of utilization at different levels of vitamin D intake instead of the indirect estimates which have been discussed. This direct evaluation is the one procedure available which permits the estimation of an appropriate rather than a minimal requirement for vitamin D. Rickets prevention can be a criterion only in infancy, whereas the retained quantity of calcium and phosphorus offers a criterion for all age periods. Ample rather than minimal retention of calcium and phosphorus is required throughout the period of growth to supply material for new bone and for the replacement of water in bone already formed. Ample retention of these elements is desirable also to aid in compensating for the inevitable mineral losses in association with illness.

The consensus of various studies seems to be that the quantity of vitamin D received by a baby fed customary quantities of milk containing 135 units<sup>9</sup> to the quart is sufficient to prevent the development of rickets in the majority of full term infants but insufficient to prevent moderate or severe rickets in prematurely born infants; that from 300 to 400 units daily as cod liver oil or as milk containing 400 units to the quart allows sufficient vitamin D to prevent rickets of clinical significance in both full term and prematurely born infants.<sup>10</sup>

8. (a) Stearns, Genevieve; Jeans, P. C., and Vandecar, Verva: The Effect of Vitamin D on Linear Growth in Infancy, *J. Pediat.* 9:1 (July) 1936. (b) Slyker, F.; Hamill, B. M.; Poole, M. W.; Cooley, T. B., and Macy, Icie G.: Relationship Between Vitamin D Intake and Linear Growth in Infants, *Proc. Soc. Exper. Biol. & Med.* 37:499 (Dec.) 1937.

9. All units mentioned in this review refer to U. S. P. XI units of vitamin D.

10. (a) Rapoport, Milton, and Stokes, Joseph, Jr.: II. The Antirachitic Value of Irradiated Evaporated Milk and Irradiated Whole Fluid Milk in Infants, *J. Pediat.* 8:154 (Feb.) 1936. (b) Eliot, Martha M.; Nelson, E. M.; Barnes, D. J.; Browne, Florence A., and Jess, Rachel M.: A Study of the Comparative Value of Cod Liver Oil, Viosterol and Vitamin D Milks in the Prevention of Rickets and of Certain Basic Factors Influencing their Efficacy, *ibid.* 9:355 (Sept.) 1936. (c) Drake, T. G. H.; Tisdall, F. F., and Brown, Alan: Irradiated Evaporated Milk in the Prevention of Rickets, *ibid.* 8:161 (Feb.) 1936; A Comparison of the Antirachitic Effect of Irradiated Cholesterol and Cod Liver Oil, *ibid.* 9:421 (Oct.) 1936. (d) Davidson, L. T.; Merritt, Katharine K., and Chipman, S. S.: Prophylaxis of Rickets in Infants with Irradiated Evaporated Milk, *Am. J. Dis. Child.* 53:1 (Jan., pt. 1) 1937; (e) Prophylaxis of Rickets in Infants with Vitamin D Milk, *ibid.* 51:1 (Jan.) 1936. Jeans.<sup>11</sup>

Early studies reported different normal standards for the serum calcium and phosphorus levels of breast-fed and artificially fed babies. Later studies showed that artificially fed infants given adequate vitamin D had serum values equaling those of infants given human milk.<sup>11</sup> When infants are fed milk containing 135 units of vitamin D to the quart, the serum calcium and phosphorus values are normal, but higher dosages of vitamin D (from 300 to 400 units) permit levels nearer the top of the normal range.<sup>12</sup>

It has been observed that infants given milk containing 135 units to the quart tend to grow at average rates, whereas infants given from 300 to 400 units of vitamin D tend to grow somewhat faster than the average.<sup>8a</sup> This observation has been corroborated recently.<sup>8b</sup>

Studies of calcium and phosphorus retention<sup>13</sup> have shown that infants given no additional vitamin D show marked variability in calcium retention with a low average. When from 60 to 135 units of vitamin D is given daily, the number of low retentions decreases, raising the average retention of the group. A further and significantly greater increase in average retention is obtained (by raising the lower limit of the retention range) when from 300 to 400 units of vitamin D is fed daily. Thus, increasing the vitamin D content of the diet from 0 to 300 or 400 units decreases variability of the infant in regard to ability to retain calcium and tends to raise all infants to the level of those most efficient in calcium retention. These studies show also that the calcium retentions observed when from 300 to 400 units of vitamin D is fed daily are accompanied by excellent dentition and the maintenance of serum calcium and phosphorus at high normal levels as well as by increased growth and development. The average retention observed when from 300 to 400 units of vitamin D is given apparently is ample to provide abundantly the nutritional needs for these minerals, even at the somewhat increased rate of skeletal growth observed.

Data are not available to show whether an amount of vitamin D between 135 and 300 units daily would be equally effective in permitting ample retention of calcium and phosphorus. Whatever the minimal level of vitamin D for good retention of these minerals, that level seems to be greater than 135 units.

A few observations indicate that amounts of vitamin D which are considerably in excess of 400 units daily may be detrimental when growth and retention are used as criteria. In an inpatient study, five infants given 1,500 or more units daily have shown decreased appetite accompanied by retardation of growth at or beyond 6 months of age. Decreasing the vitamin D intake of two of these infants has resulted in a greater food intake and an increased rate of growth.<sup>14</sup> Further study will be necessary before the significance of these observations can be evaluated.

Present knowledge of the relationship of vitamin D to growth helps to explain the occasional diagnosis of

11. Stearns, Genevieve, and Warweg, Edna: Studies of Phosphorus of Blood: I. The Partition of Phosphorus in Whole Blood and Serum, the Serum Calcium and Plasma Phosphatase from Birth to Maturity, *J. Biol. Chem.* 102:749 (Oct.) 1933.

12. (a) Jeans, P. C., and Stearns, Genevieve: The Retention of Calcium by Infants Fed Evaporated Milk Containing Cod Liver Oil Concentrate, *Proc. Soc. Exper. Biol. & Med.* 32:1468 (June) 1935. (b) McQuarrie, Irvine; Thompson, W. H.; Stoesser, A. V., and Rigler, L. G.: The Antirachitic Potency of Ergosterol Activated by Low Velocity Electrons, *J. Pediat.* 10:295 (March) 1937.

13. Stearns, Genevieve, and Jeans, P. C.: The Effect of the Quantity of Vitamin D Intake on Calcium Retention in Infancy, *J. Biol. Chem.* 114:c (May) 1936.

14. Stearns, Genevieve, and Jeans, P. C.: Unpublished data.

rickets by roentgenographic means when rickets probably is not present. The small changes used as criteria in the roentgenographic diagnosis of slight rickets occur when no vitamin D is given and tend ultimately to increase, producing the picture of clinical rickets. When from 60 to 135 units of vitamin D is given daily, a minimum number of these changes is reported in inpatient studies.<sup>7a</sup> When from 300 to 400 units of vitamin D is given and growth is more rapid, a larger number of small changes in growth at the epiphysal line is reported, but these changes (in inpatient studies) never become any more definitely rachitic and accompany excellent retention of calcium with maintenance of serum calcium and phosphorus at high normal levels. From outpatient studies fewer bone changes are reported when large amounts of vitamin D are given. As the rate of growth seems to be nearly maximal with from 300 to 500 units of vitamin D,<sup>8</sup> it seems that the small changes reported as evidence of early or very mild rickets may represent equally well changes due to rapidity of growth except when no vitamin D is given.

Factors other than those which have been discussed must be considered along with the vitamin D requirement. One of these is the relative ease of administration. This has been brought out in several published studies of outpatient groups in which it was found that the amount of rickets occurring was in direct proportion to the amount of cod liver oil prescribed.<sup>15</sup> The apparent supremacy of vitamin D milks in outpatient studies may be ascribed to this cause.

Another factor requiring consideration is the relative efficacy of the different varieties of vitamin D. This question has been discussed at length in a previous review.<sup>7a</sup> It is possible that vitamin D from vegetable sources (related to ergosterol) is less potent for man on a unit for unit basis than that from animal sources (related to cholesterol). The difference in potency between these two varieties, if any exists, is small, almost certainly no greater than 1:1.5, and probably less than this. Criteria capable of determining such a narrow difference must be most exacting, and a satisfactory answer to the problem does not seem possible with available information.

A factor of apparently greater importance than the source of vitamin D is its state of concentration or dispersion. It has long been believed on the basis of clinical experience that a greater unitage of vitamin D is required as viosterol in oil than as cod liver oil. It seems probable that a large part of this difference, if not all of it, may be explained on the basis of relative dispersion. Lewis,<sup>16</sup> Erben<sup>17</sup> and Shelling<sup>18</sup> have shown in clinical experiments that irradiated ergosterol in a dispersed state is much more effective than the same material in a high concentration. The best concentration for efficient utilization is not known. Data<sup>12a</sup> (from observations of infants receiving cod liver oil and various vitamin D milks) indicate that infants can utilize vitamin D in concentrations up to at least

100 units to the gram as efficiently as they utilize this vitamin in a highly dispersed state. The difference in utilization depending on concentration makes difficult the evaluation of data on the effect of higher dosages, for these high dosages have been given almost exclusively as concentrates or patent pharmaceutical preparations. The effect of the very high dosages in decreasing appetite suggests that a larger absolute amount is absorbed than with the smaller dosages of the dispersed forms; the disproportionate antirachitic effect between concentrated and dispersed forms indicates that a much smaller proportion is absorbed from the concentrates. In view of the strong probability that concentrated forms of vitamin D are not fully absorbed, it seems wise to proceed cautiously in administering to infants high unitages of the more dispersible forms of vitamin D. The actual limit of tolerance may be lower than the amounts which hitherto have been administered without toxic effect.

Tentatively the vitamin D requirement of the infant fed cow's milk may be stated as between 300 and 400 units daily, these amounts having been shown to be efficient in prophylaxis of rickets, in producing ample retention of calcium and phosphorus and in permitting excellent skeletal growth and dentition. This requirement is stated in terms of vitamin D of no greater concentration than is found in average high grade cod liver oil.

*Infants Fed Human Milk.*—The requirement of breast-fed infants for vitamin D is in general less than that of babies fed cow's milk. Infants fed human milk are less liable to the development of rickets when no vitamin D is given; however, rickets is by no means rare. A study of the literature shows that the calcium retention of infants receiving human milk and no additional vitamin D is somewhat less variable than that of infants receiving cow's milk without vitamin D; but the number of low retention values observed is sufficient to account for the occasional development of rickets. In our laboratory four infants fed human milk were given from 300 to 400 units of vitamin D daily; the calcium retention was less variable than is reported for infants given no additional vitamin D, and the average retention was approximately 50 per cent higher. It seems that for infants fed human milk, as for artificially fed babies, the ingestion of vitamin D decreases the range of retention by increasing the efficiency of those with poor retentions to equal that of infants most efficient without vitamin D. It appears that for many breast-fed babies vitamin D is essential and for most of them it is useful. Though the requirement cannot be stated with accuracy on the basis of available data, it would seem wise to prescribe the same amount as is required by the artificially fed baby.

*Prematurely Born Infants.*—The vitamin D needs of prematurely born infants are not easy to determine because of the difficulty of supplying ample amounts of calcium and phosphorus during the first few weeks of extra-uterine life. Normally during the last month of full term pregnancy the fetal need of calcium is approximately 0.3 Gm. daily. Obviously it is not possible for a prematurely born infant fed human milk to ingest this quantity of calcium, much less to retain it. Even when the feedings are fortified with dried skimmed milk or calcium caseinate, the total calcium intake is usually under 0.6 Gm., an amount which may be considered scarcely sufficient to permit retention of 0.3 Gm. The prematurely born infant tends to grow

15. Drake, T. G. II.; Tisdall, F. F., and Brown, Alan: A Study of the Relative Antirachitic Values of Cod Liver Oil, Viosterol and Irradiated Milks, *Canad. M. A. J.* 31: 368 (Oct.) 1934. Eliot, Nelson, Barnes, Browne and Jense.<sup>19</sup>

16. Lewis, J. M.: Clinical Experience with Crystalline Vitamin D: The Influence of the Menstruum on the Effectiveness of the Antirachitic Factor, *J. Pediat.* 6: 362 (March) 1935; Further Observations on the Comparative Antirachitic Value of Crystalline Vitamin D Administered in Milk, Corn Oil, or in Propylene Glycol, *ibid.* 8: 308 (March) 1936.

17. Erben, Fridtjof: Ueber den Einfluss des Lösungsmittels auf die therapeutische Wirksamkeit des bestrahlten Ergosterins, *München. med. Wochenschr.* 82: 1794 (Nov. 8) 1935.

18. Shelling, D. H.: Calcium and Phosphorus Studies: XIII. The Effect of Emulsification on the Potency of Viosterol in Treatment of Rickets in Children, *J. Pediat.* 10: 748 (June) 1937.



more rapidly than the infant born at term. The combination of increased growth and deficient intake is such a handicap that it is doubtful whether the ingestion of vitamin D can compensate entirely, though it may readily compensate to the extent of preventing rickets.

Davidson, Merritt and Chipman<sup>19</sup> reported that irradiated evaporated milk is inadequate to protect prematurely born infants from moderate or severe rickets. The amount of vitamin D received by these babies varied from 24 to 59 units daily at the age of 1 month. These same authors<sup>19</sup> found that cow's milk containing 430 units of vitamin D to the quart protected against moderate and severe rickets but not against the roentgen signs of slight rickets. Reinterpretation of the data in the light of the preceding discussion of roentgenographic evidence of rickets in this review permits the exclusion of these cases of slight rickets and allows the conclusion that all the infants were protected. The amount of vitamin D received by these babies varied from 116 to 245 units with an average of 170 units at the age of 1 month. The average birth weight of the babies was 2,000 Gm., and the average weight at 1 month was 2,500 Gm. Horeish and Russell<sup>19</sup> found complete protection against rickets in prematurely born infants from the use of a protein milk containing 3.8 cc. of cod liver oil to the quart. McQuarrie<sup>12b</sup> obtained rickets prevention with 540 units daily as activated ergosterol. Davidson, Merritt and Chipman<sup>20</sup> reported that viosterol fed at a level of 3,150 units daily did not protect against roentgenographic evidence of slight rickets in prematurely born infants receiving human milk, cow's milk or mixed feeding, but again reinterpretation permits the conclusion that rickets was prevented. Shelling<sup>21</sup> observed osteoporosis but not rickets in premature infants given from 3,500 to 4,500 units of vitamin D as viosterol. These reports indicate that rickets is prevented in prematurely born infants by an amount of vitamin D approximately twice that known to protect the majority of full term infants and that rickets is not prevented by an amount less than that required for full term infants. No means are at hand for comparing the relative effects of the same amount of vitamin D in the two groups. The possibility remains that the prematurely born baby requires no more vitamin D for the prevention of rickets than the baby born at term. For the full term infant the amount that permits ample retention of calcium is considerably greater than that which barely prevents rickets. No doubt this holds for the prematurely born baby also. Until further information is obtained it may be tentatively considered that prematurely born babies require twice as much vitamin D as babies born at term, or from 600 to 800 units fed in a dispersed form. After the period of most rapid growth in early infancy the requirement should be the same as for the full term infant.

#### REQUIREMENT DURING CHILDHOOD

The requirement for ingested vitamin D has been assumed to decline after infancy, though little experimental evidence for this supposition exists. Belief in this idea is reflected in the widespread lack of use of

vitamin D preparations in childhood compared to the almost universal use in infancy. The assumption of a lesser need may be based on the absence of rickets in childhood and on the presumption that older children get more sunshine than infants. Whether or not the fault is with vitamin D, there is abundant evidence that present customs of diet in this country are not fully adequate for optimal skeletal and dental development. This is attested by the prevalence of dental caries and, in late childhood, the finding of osteoporosis. As a cause of these abnormalities a deficiency of intake of calcium, vitamin D or both substances is probably more common with the American type of diet than an intake deficient in phosphorus. At least some of these defects may be caused by inadequacy of vitamin D.

The criteria of adequacy of intake of vitamin D are fewer for children than for infants. Prevention of rickets is of no value and studies of levels of calcium and phosphorus in the blood are of little assistance. The rate of growth might be useful, but no studies have come to our attention in which this criterion was used when vitamin D was the only factor varied. A criterion which has a considerable degree of usefulness is the prevention and arrest of dental caries. The most satisfactory criterion subject to quantitative measurement is the retention of calcium and phosphorus with and without vitamin D, compared with the calculated requirement for these minerals.

*Dental Caries.*—Numerous observations have shown that vitamin D is a factor in prevention and arrest of dental caries. In some instances vitamin D has been added to the diet in an orphanage or other group without other change. The effect on the teeth has been variable, as is to be expected. It is worth reiterating that vitamin D does not reduce the minimum requirement for calcium and that vitamin D may not be expected to improve a diet containing an amount of calcium below the minimum requirement. In order to determine the vitamin D requirement by using the criterion of dental caries, the diet must be adequate in all respects other than vitamin D, including adequate calcium and phosphorus.

Mellanby<sup>22</sup> administered cod liver oil in an amount containing from 700 to 1,500 units of vitamin D daily as a supplement in orphanage diets which happened to be deficient in fruits and animal protein and which contained about 500 cc. of milk daily. Mellanby reported that the children to whom cod liver oil had been given developed fewer new cavities and showed arrested progress of old caries, although carious activity was not entirely prevented. A somewhat similar type of observation by Day and Sedwick<sup>23</sup> gave negative results. They found no change in the carious processes in a group of school children for whom was prescribed 4,000 units of vitamin D daily as viosterol, as compared to a control group not receiving vitamin D. These children lived at home and the diets were uncontrolled. Anderson and his co-workers<sup>24</sup> noted a "marked decrease" in dental caries when viosterol (4,700 units) was administered to children with presumably good diets. McBeath<sup>25</sup> reported reduced

22. The Committee for Investigation of Dental Disease: The Influence of Diet on Caries in Children's Teeth (Final Report), Medical Research Council, Special Report Series, No. 211, London, His Majesty's Stationery Office, 1936.

23. Day, C. D. M., and Sedwick, H. J.: The Fat Soluble Vitamins and Dental Caries in Children, *J. Nutrition* 8: 309 (Sept.) 1934.

24. Anderson, P. G.; Williams, C. H. M.; Halderson, H.; Summerfeldt, C.; and Agnew, R. G.: The Influence of Vitamin D in the Prevention of Dental Caries, *J. Am. Dent. A.* 21: 1349 (Aug.) 1934.

25. McBeath, E. C.: Nutritional Control of Dental Caries, *New York State J. Med.* 33: 1086 (Sept. 15) 1933.

19. Horeish, A. J., and Russell, G. R.: Observations on the Growth and State of Nutrition of Premature Infants Given an Antirachitic and Antiscorbutic Food, *Ohio State M. J.* 31: 339 (May) 1935.  
20. Davidson, L. T.; Merritt, Katharine K., and Chipman, S. S.: Further Studies of Viosterol in the Prophylaxis of Rickets in Premature Infants, *Am. J. Dis. Child.* 51: 594 (March) 1936.  
21. Shelling, D. H., and Hopper, Katherine B.: Calcium and Phosphorus Studies: XII, Six Years' Clinical Experience with Viosterol in Prevention and Treatment of Rickets, Tetany and Allied Diseases, *Bull. Johns Hopkins Hosp.* 58: 137 (March) 1936.

incidence of dental caries in an orphanage group whose diets are recorded as "good," when 10,000 units of vitamin D as viosterol was given daily without other dietary change. It is evident from the observations cited and others in the literature that vitamin D is a factor in the arrest and control of dental caries, but most of these reports give no clue to the vitamin D requirement.

McBeath<sup>26</sup> has reported the prevention of dental caries with the administration of an excellent experimental diet including 3 teaspoonfuls of cod liver oil. He<sup>26</sup> has reported also in a winter study of orphanage children a decrease in the number of new carious processes when the unrecorded diet was altered by the addition of 1 pint of milk and by 1 pint of milk containing 270, 400 and 800 units of vitamin D respectively, the improvement in the dental condition being in the order stated. Decrease in caries produced by the addition of milk alone indicates that the basal diet may not have been adequate. The apparent superiority of 800 over 400 units of vitamin D may not be actual, because these unitages were employed in different orphanages and were not added to the same basal orphanage diet. However, definite superiority of 800 over 270 units was shown.

Boyd and Drain and their co-workers<sup>27</sup> observed rapid arrest of dental caries in children given a well rounded diet which included a quart of milk and about 350 units of vitamin D daily, the latter in the form of cod liver oil. In a recent intensive study of four children with dental decay these authors<sup>28</sup> noted the effect of diets otherwise adequate but with the vitamin D intakes graduated; 0, 155 and 600 units daily were given successively to the same children. The ingestion of a good diet without added vitamin D brought about appreciable lessening of the activity of the caries during the first few weeks of the study in the fall months with the children spending much time outdoors. Subsequently for a period of five months, during which the children received a diet of high protective value aside from its vitamin D content and through both the periods of no added vitamin D and of the 155 unit addition, the caries was stationary with minimal but definite activity. It was not until the higher amount of 600 units of vitamin D had been given for nine weeks that the caries became definitely arrested. The results with 600 units daily showed no advantage of this amount over the 350 units daily intake of previous experiments.

Incidentally it is worthy of mention that the studies of Boyd and Drain have pertained exclusively to dentinal caries, while most if not all other observers have included both caries of the dentin and of the enamel in their data. Included in the latter designation, lesions due to dystrophy, fracture and disintegration have been considered; any surface irregularities deep enough to catch the exploring line have been designated as sites of decay. Obviously not all these bear relation to nutrition. This difference of interpretation must be evaluated in comparing studies of tooth decay. The effect of nutrition on enamel disintegration remains to be determined. It is possible that complete prevention of enamel "caries" by a nutritional regimen is not to be expected.

One may conclude from the dental studies that the greatest freedom from dental caries is observed in groups of children receiving an adequate diet containing ample quantities of milk and 350 or more units of vitamin D daily. If the diet is suboptimal, the addition of vitamin D lessens the severity but does not prevent dental caries. Similarly, a diet otherwise adequate but lacking in vitamin D may decrease the incidence but not prevent entirely the development of tooth decay, nor provide for complete arrest of caries already present.

*Calcium and Phosphorus Retention.*—Many studies of calcium and phosphorus retention of children are available, though in but few have comparative studies been made with and without vitamin D. Unlike studies throughout infancy, wherein the dietary regimen is known for the entire period after birth, observations in childhood are more likely to be handicapped by incomplete knowledge of the previous dietary regimen. Wang<sup>29</sup> has shown that if the child's previous diet has been deficient in calcium, the calcium retention during the period of observation may be unusually high. In our studies there have been observed also a few children whose previous diets had been deficient in calcium but who reacted very slowly to the change in diet; only after several weeks of ingestion of an adequate diet with added vitamin D did the calcium and phosphorus retention reach the average of the group. Because of the influence of previous dietary conditions on the retention observed from a given diet, it has become customary to allow a longer period of adjustment to the experimental diet than was formerly the custom and to make a series of retention studies rather than a single observation with each given dietary. When the experiment is conducted in this manner the results are more reliable.

The adequacy of a diet in calcium, phosphorus and vitamin D may be judged by comparing the retention observed with the quantities considered ample for osseous and dental development. Because the quantity of phosphorus retained varies with the nitrogen as well as the calcium retention, the quantity of calcium retention may be used as the most convenient guide. When the standards set up by Leitch<sup>30</sup> are recalculated into the more customary terms of retention per kilogram, the calcium retention considered desirable decreases from 25 mg. per kilogram for a year old child to from 10 to 12 mg. for a child over 6 years of age. These values are somewhat higher for young children than those postulated as desirable by Sherman and Hawley.<sup>31</sup>

Reports of long term studies of children not given vitamin D stress the variability of calcium retention observed in a group of children<sup>30</sup> or in the same child from period to period of study.<sup>31</sup> The retention observed with an intake of 1 Gm. of calcium daily varied from 6 to 24 mg. per kilogram, and the average retention of some children was far below the amounts postulated as safe by Leitch.

Weld and Sykes<sup>32</sup> determined the calcium and phosphorus retention of six children over a five week

29. Wang, Chi Che; Kaucher, Mildred, and Frank, Margaret: Metabolism of Undernourished Children: IV. Calcium Metabolism, *Am. J. Dis. Child.* 35: 256 (May) 1928.

30. Hunscher, Helen A.; Hummel, Frances C., and Macy, Lele G.: Variability of Metabolic Response of Different Children to a Given Intake of Calcium, *Proc. Soc. Exper. Biol. & Med.* 35: 189 (Oct.) 1936.

31. Porter-Levin, Thelma: Calcium and Phosphorus Metabolism of Normal Preschool Children: II. Successive Balance Studies Showing Range of Variation in Calcium and Phosphorus Studies, *J. Am. Dietet. A.* 9: 22 (May) 1933.

32. Weld, C. B., and Sykes, J. F.: The Effect of Irradiated Ergosterol on Calcium and Phosphorus Retention in Children, *Tr. Roy. Soc. Canada (Sect. V)* 26: 81, 1932.

26. McBeath, E. C.: Vitamin D Studies, 1933-1934, *Am. J. Pub. Health* 24: 1028 (Oct.) 1934.

27. Boyd, J. D.; Drain, C. L., and Nelson, Martha V.: Dietary Control of Dental Caries, *Am. J. Dis. Child.* 38: 721 (Oct.) 1929.

28. Boyd, J. D.; Drain, C. L., and Stearns, Genevieve: Nature of Diet in Its Relationship to Control of Dental Caries, *Proc. Soc. Exper. Biol. & Med.* 36: 645 (June) 1937.

period with an intake of 0.82 Gm. of calcium and no added vitamin D. During a second five week period 135 units of vitamin D as irradiated ergosterol was added to the diet of four of the children with no significant change observed in the retention.

We<sup>33</sup> studied fifty children aged from 1 to 12 years with varying intakes of milk and with and without added vitamin D. When given, the amount of vitamin D was from 300 to 400 units as cod liver oil daily. For the majority of these children each dietary regimen was maintained for from five to eight weeks. A few were studied for periods up to three months with one dietary regimen. All children were permitted outdoor exercise when weather allowed. The variability of retention noted by others when children were not given vitamin D was also observed in this series. The retention of the younger children was more variable than that of the older but less variable than had been observed in infants not given vitamin D. As with the infants, the addition of vitamin D decreased the variability of retention by decreasing the number of poor retentions. Thus, if a child utilized calcium efficiently without added vitamin D, the addition of the vitamin to the diet had little effect. If, however, the utilization was poor, the ingestion of vitamin D increased the retention of calcium. The increased retention was by no means always observed promptly; two of the children studied did not achieve retention equal to the average of their age group until the diet with vitamin D had been given for a period of from two to three months. One of these children had active dental caries at the beginning of the experiment; the caries remained active much longer than is customarily observed in this clinic. The retention observed in this group of fifty children indicates that the ingestion of vitamin D in no way decreases the quantity of calcium need but that it assures better utilization. A retention equal to that postulated by Leitch as desirable was consistently obtained when the milk intake was 750 cc. daily or higher and when vitamin D was given.

Daniels and her collaborators<sup>34</sup> fed vitamin D in daily amounts varying from approximately 1,200 units (15 cc. of cod liver oil) to 3,000 units or more (15 cc. of cod liver oil plus 8 drops of viosterol). Though these studies were of short duration, the study group was large. An average retention of about 10 mg. per kilogram was observed whether the intake of milk was 1 pint or 1 quart daily. These retention values are lower than those noted by Hunscher and her co-workers in long term studies of children of this age group not receiving additional vitamin D, and considerably lower than the average values observed by us in children of the same age range given from 300 to 400 units of vitamin D daily.

It seems from a summary of the studies which have been cited that the variability of response to the calcium of the diet is marked in young children not given vitamin D. Efficiency of utilization tends to increase with increasing age of the child, but even by 9 or 10 years of age many children seem unable to utilize efficiently the calcium and phosphorus of the diet unless vitamin D is also ingested. The daily allowance of at

least 750 cc. of milk together with from 300 to 400 units of vitamin D seems to permit consistently ample retention of calcium and phosphorus for proper development of bone and teeth. The data at hand are not sufficient to allow an accurate estimate of the optimal intake of vitamin D for children, though it appears probable that the total quantity needed daily is not greater than the amount required for infants, nor does it seem to be less.

#### ADOLESCENCE

The literature contains very few reports of studies of either the calcium or the vitamin D requirement of adolescents, notwithstanding the fact that this age period is of special importance because of the rapid skeletal growth. Leitch has estimated that a retention of from 500 to 700 mg. of calcium daily is necessary to maintain normal calcification during this period. The condition of the teeth of the average adolescent and the possible occurrence of osteoporosis<sup>35</sup> during this period of growth indicate inadequacy of present dietaries. Whether in this state of suboptimal calcification the need is primarily for calcium or for vitamin D is difficult to determine with the data at hand.

Herbst<sup>35</sup> in 1913 reported calcium retention of two boys aged 13 and 14 years, with a calcium intake of 0.62 and 0.64 Gm. daily. The younger, who was growing rapidly, retained 0.3 Gm. of calcium daily, the older 0.15 Gm. Wang and her associates<sup>36</sup> have summarized the scanty data in the older literature and have added twenty-three six day studies of girls from 12 to 15 years of age. Vitamin D was not given. In Wang's study the daily intake of calcium varied from 1.18 Gm. to 1.80 Gm. and the retention from 0.079 Gm. to 0.823 Gm., or from 1 to 19 mg. with an average of 11 mg. per kilogram; the average retention was 417 mg. daily, two thirds of the group retaining less than the Leitch standard of 500 mg. daily.

Henderson and Kelly<sup>37</sup> studied for twenty-four weeks the calcium retention of five African boys aged from 15 to 17 years. With the control diet containing 0.3 Gm. of calcium the boys lost calcium at a rate of approximately 0.1 Gm. a day. The addition of cod liver oil to the diet of one boy did not decrease the calcium loss. The diets of three of the subjects were then supplemented respectively with 1 pint of milk daily, a mineral mixture equivalent to the minerals of 1 pint of milk daily, and the mineral mixture with added cod liver oil. The calcium retention of each of the three boys was consistently positive, varying from 0.096 Gm. to 0.5 Gm. daily, the higher value being obtained with the addition of milk without cod liver oil. The data are insufficient to permit evaluation of the effect of vitamin D added to the increased diet but do demonstrate that the ingestion of vitamin D did not decrease the minimal requirement for calcium.

The data obtainable from studies of adolescents indicate that individuals are by no means equally efficient in retaining calcium without the ingestion of vitamin D. Apparently the variability in ability to utilize the calcium and phosphorus of the diet is a major factor in determining the quantity of these elements retained by adolescents as well as by younger

33. Jeans, P. C., and Stearns, Genevieve: The Vitamin D Requirement of the Child, *Proc. Am. Pediat. Soc., Am. J. Dis. Child.* 54: 189 (July) 1937.

34. Daniels, Amy L.; Hutton, Mary K.; Knott, Elizabeth; Everson, Gladys, and Wright, Olive E.: Relation of Ingestion of Milk to Calcium Metabolism in Children, *Am. J. Dis. Child.* 47: 499 (March) 1934.

35. Daniels, Amy L.; Hutton, Mary K.; Knott, Elizabeth; Wright, Olive, and Forman, Mary: Calcium and Phosphorus Needs of Pre-School Children, *J. Nutrition* 10: 373 (Oct.) 1935.

36. Wang, Chi Che; Kaucher, Mildred, and Wung, Mary: Metabolism of Adolescent Girls: IV. Mineral Metabolism, *Am. J. Dis. Child.* 52: 41 (July) 1936.

37. Henderson, J. M. and Kelly, F. C.: Influence of Certain Dietary Supplements in Relation to the Calcium Requirements of Growing African Natives, *J. Hyg.* 29: 429 (Feb.) 1930.

children. It is indicated also that vitamin D does not lower the minimum requirement for ingested calcium, though no estimate can be made as to the optimal intake of either calcium or vitamin D.

#### REQUIREMENTS OF ADULTS

*Men and Nonpregnant Women.*—During adult life the quantity of calcium and phosphorus considered necessary is only that amount sufficient for maintenance. It may be found that some retention of calcium and phosphorus is desirable, at least during the post-adolescent period. Whether the addition of vitamin D may be necessary to insure such retention or whether the ingestion of vitamin D would insure better utilization of an intake only slightly above minimal requirements are questions difficult to answer with the few data at hand.

Much of the calcium intake of adults may be from sources other than milk; therefore the acid-base ratio of the diet assumes importance. The ingestion of an acid-ash diet or of acid salts increases the urinary excretion of calcium. If the intake is low, the added excretion may be sufficient to cause a negative calcium balance. Wide differences in intake ratios of calcium and phosphorus apparently have less effect on the retention of these elements by adults<sup>38</sup> than by children.<sup>39</sup>

Leitch<sup>38</sup> has summarized the data for the calcium requirement of women not ingesting vitamin D. She concluded that, at or above a daily intake of 0.55 Gm. of calcium, losses of one period were equaled by gains of another, whereas below this intake output usually exceeded intake. The minimum calcium requirement as set by Sherman<sup>40</sup> is somewhat lower; namely, 0.45 Gm. a day. Few data are available concerning the requirement for men, but such as there are<sup>38</sup> indicate that the daily requirement is about the same as for women.

Most of the published studies of the effect of vitamin D on calcium and phosphorus retention of adults have centered on an attempt to determine whether an increased ingestion of vitamin D decreases the minimal requirement for calcium. The answer is unanimously in the negative.<sup>41</sup> When vitamin D has been given as an addition to a diet containing more than the minimal requirement of calcium, the results have been conflicting. All the subjects studied by Kelly and Henderson<sup>41</sup> and by Bauer and his co-workers<sup>41</sup> retained calcium when the intake of this element was ample and no vitamin D was ingested. A further increase in retention was noted by Kelly and Henderson when cod liver oil was given in addition to the increased mineral intake. Bauer and his collaborators observed no increase in retention when from 30 to 90 mg. of irradiated ergosterol was given in addition to the high calcium diet but did obtain evidence of increased absorption, for the urinary excretion of calcium was increased and the fecal calcium correspondingly decreased when vitamin D was given. Hunscher and

her co-workers<sup>42</sup> studied three young women whose calcium intake varied from 0.7 to 1.0 Gm. a day, amounts ordinarily considered ample. When no vitamin D was given two of the three women consistently lost 0.1 Gm. of calcium a day, the third was approximately in calcium equilibrium. When 15 Gm. of cod liver oil was given daily for twenty-three days the average calcium losses were not decreased, nor do the data show any significant alteration in the mode of calcium excretion.

Data are not available as to the effect of vitamin D on retention of calcium and phosphorus by middle-aged or elderly persons. The prevalence of senile osteoporosis may be due wholly to the habit common to most American adults of ingesting diets low in calcium. It has been shown<sup>43</sup> that mineralization of bone can be increased in adults past 60 by increasing the intake of calcium and vitamin D. Since elderly persons are less likely to be exposed to sunlight than more vigorous younger adults, the ingestion of moderate amounts of vitamin D, together with a diet ample in calcium and phosphorus, might serve to prevent the development of osteoporosis in the older adult.

Animal studies bearing on these questions include those of Sherman and Campbell,<sup>60</sup> who showed that when young rats are given a diet somewhat subminimal in calcium content, normal growth occurs, but normal calcification of bone is not achieved until nearly middle age. A recent report of these authors<sup>44</sup> lists an ample intake of calcium among the factors resulting in longer life and extension of the period of adult vitality of rats. Even if these observations are assumed to hold for human beings, there still remains to be determined whether and how much vitamin D would contribute to better utilization of calcium by adults.

The observations on adults indicate, as for children, that the ingestion of vitamin D in no way lessens the requirement for calcium. Whether vitamin D, when given in addition to an ample mineral intake, increases the utilization of calcium undoubtedly varies with the person. Although the average adult seems more efficient in the absorption of calcium than the average child, vitamin D may aid the inefficient adult in the same manner as the inefficient child. If this is true, the amount of vitamin D optimal for this purpose remains to be determined.

Reed and others<sup>45</sup> have given vitamin D in enormous dosage to adults, with apparently few untoward effects. The limit of tolerance varies with the individual but seems to be 150,000 units or more. The vitamin in these studies was given always as a very concentrated product. Whether adults utilize the concentrated sources of vitamin D efficiently or not, the enormous unitage given can be interpreted as indicating that the tolerance of the adult to vitamin D must be relatively high.

*Pregnancy and Lactation.*—The calcium and phosphorus requirement during pregnancy and lactation has

38. Farquharson, R. F.; Salter, W. T., and Aub, J. C.: The Effect of the Ingestion of Phosphates on the Excretion of Calcium. *J. Clin. Investigation* 10: 251 (June) 1931.

39. Stearns, Genevieve, and Jeans, P. C.: Utilization of Calcium Salts by Children. *Proc. Exper. Biol. & Med.* 32: 428 (Dec.) 1934.

40. Sherman, H. C.: Calcium Requirement of Maintenance in Man. *J. Biol. Chem.* 44: 21 (Oct.) 1920.

41. Hart, M. C.; Tourtelotte, Dee, and Heyl, F. W.: Effect of Irradiation and Cod Liver Oil on Calcium Balance in the Adult Human. *J. Biol. Chem.* 76: 143 (Jan.) 1928. Kelly, F. C., and Henderson, J. M.: The Influence of Certain Dietary Supplements on the Nutrition of the African Native. *L. J. Hyg.* 29: 418 (Feb.) 1930. Bauer, Walter; Marble, Alexander, and Chaffin, Dorothy: Studies on the Mode of Action of Irradiated Ergosterol: I. Its Effect on the Calcium, Phosphorus and Nitrogen Metabolism of Normal Individuals. *J. Clin. Investigation* 11: 1 (Jan.) 1932.

42. Hunscher, Helen A.; Donelson, Eva, and Erickson, Betty Nims: Results of the Ingestion of Cod Liver Oil and Yeast on Calcium and Phosphorus Metabolism. *J. Nutrition* 8: 341 (Sept.) 1934.

43. Meulengracht, E., and Meyer, A. R.: *Ugeskr. f. læger*, 98: 961, 1936; quoted by Leitch.<sup>38</sup>

44. Sherman, H. C., and Campbell, H. L.: Nutritional Well-Being and Length of Life as Influenced by Different Enrichments of an Already Adequate Diet. *J. Nutrition* 14: 609 (Dec. 10) 1937.

45. Reed, C. I.: Symptoms of Viosterol Overdosage in Human Subjects. *J. A. M. A.* 102: 1745 (May 26) 1934. Wyatt, B. L.; Hicks, R. A., and Thompson, H. E.: Massive Doses of Vitamin D in the Treatment of Proliferative Arthritis. *Ann. Int. Med.* 10: 534 (Oct.) 1936. Steck, J. E.: Clinical Experience in the Treatment of Arthritis with Massive Doses of Vitamin D. *Illinois M. J.* 71: 243 (March) 1937. Ceder, E. T., and Zon, Leo: Treatment of Psoriasis with Massive Doses of Crystalline Vitamin D and Irradiated Ergosterol. *Pub. Health Rep.* 52: 1580 (Nov. 5) 1937.

received much intensive study. The report of Bauer and Aub<sup>46</sup> indicates that with a subminimal intake the pregnant woman is unable to conserve calcium for the needs of the fetus. The Toveruds<sup>47</sup> observed that when the mother's diet was deficient, the skull of the infant was softer than normal, the epiphyseal lines, particularly of the metacarpals, were fringed and poorly calcified, and the teeth when erupted were often grossly hypoplastic. They observed further that when the mother's diet contained ample calcium and vitamin D, the bones and teeth of the infant were normal. Finola<sup>48</sup> and his co-workers noted a significant increase in the density of bone and a decrease in the size of the fontanel of babies whose mothers received a good diet plus approximately 1.5 Gm. of calcium as dicalcium phosphate and 7,000 units of vitamin D as viosterol, in comparison with infants whose mothers received a good diet without the addition of calcium and vitamin D.

The Toveruds<sup>47</sup> and Mellanby<sup>49</sup> both consider a poor diet of the mother during pregnancy as one of the chief predisposing factors in the development of rickets and dental caries in the children. Calcium and vitamin D are two of the factors most often deficient in the mother's diet. Corroborative evidence of the need of increased mineral retention in pregnancy is obtained in the study of Drain and Oberst<sup>50</sup> wherein the dental condition of pregnant women was shown to be improved by a diet rich in calcium and vitamin D.

The work of many investigators<sup>51</sup> demonstrates that a calcium intake of at least 1.4 to 1.6 Gm. daily is necessary in order to permit retention of the amount of calcium needed by the fetus. Below this intake the addition of vitamin D does not insure retention. With a calcium intake of from 1.6 to 2.5 Gm. some persons can retain calcium in ample amounts even without added vitamin D. Studies of multiparas<sup>52</sup> show that the drain of rapidly succeeding pregnancies and periods of lactation may result in poor retention of calcium and phosphorus regardless of intake unless vitamin D is also given. Very few show poor retention with a high intake of calcium even when the vitamin D intake is equivalent to 20 Gm. of cod liver oil. In general the addition of vitamin D in amounts supplied by from 10 to 20 Gm. of cod liver oil daily tends to increase

the retention of calcium and phosphorus. Insufficient studies have been made with ample intake of calcium and varying amounts of vitamin D to permit a conclusion or general statement as to the vitamin D requirement during pregnancy.

The studies of lactation<sup>53</sup> indicate that the drain on the mother is more severe than in pregnancy. The need for ample calcium intake is imperative. There seems necessary an intake of at least 1½ quarts of milk, containing 1.8 Gm. of calcium and representing a total day's intake of more than 2 Gm. Even then, relatively few women are efficient enough to prevent loss of calcium from the body unless additional vitamin D is given. Desirable amounts of vitamin D seem to vary with the individual, as shown by the following unpublished study from our laboratory: Two primiparas, aged 21 and 26, ingested good diets, each containing 1,500 cc. of milk and one teaspoonful of cod liver oil (from 350 to 400 units) daily. The 21 year old woman secreted from 1,000 to 1,500 cc. of milk daily and retained calcium continuously. The other woman secreted never more than 600 cc. of milk a day yet continuously lost calcium from the body; increasing the calcium intake decreased the loss but did not prevent it entirely. Again, two other primiparas, aged 17 and 19, were given from 1,800 to 2,000 cc. of milk daily. One retained calcium consistently throughout lactation; the other was unable to retain calcium until from 750 to 800 units of vitamin D daily as cod liver oil was given. The milk output of the latter was approximately 1,500 cc. and that of the former approximately 1,000 cc. a day.

Hunscher's studies<sup>54</sup> tend to show that in rapidly succeeding pregnancies and lactation periods vitamin D is especially necessary and that ample calcium intake does not suffice to prevent loss of calcium from the body unless vitamin D is given.

One factor often overlooked is the effect of the maternal diet on the quality of the milk secreted. Telfer<sup>54</sup> commented on the higher mineral content of milk of country women compared to that of women from cities. The differences were ascribed to diet and to the relative amount of sunlight. The Toveruds<sup>47</sup> found a low calcium content in the milk of fourteen mothers whose diets were poor; when the calcium intake was increased the calcium content of the milk of each woman was increased after one week, the average increase being about 25 per cent. The effect of added vitamin D was not studied, but the possibility of its ingestion increasing the calcium content of the milk should not be ignored. The content of calcium in human milk varies considerably according to reports.

While available data point strongly to the advisability of giving vitamin D during pregnancy and lactation, it is impossible with our present information to arrive at any conclusion regarding optimal dosage. Individual variability has been demonstrated. The amount of vitamin D to be recommended is that which is desirable for the least efficient in utilizing the calcium of the diet. This amount may be greater, especially during lactation, than at any other period of life.

46. Bauer, Walter; Albright, Fuller, and Aub, J. C.: Studies of Calcium and Phosphorus Metabolism: II. The Calcium Excretion of Normal Individuals on a Low Calcium Diet; also Data on a Case of Pregnancy. *J. Clin. Investigation* 7: 75 (April) 1929.

47. Toverud, K. U., and Toverud, G.: Studies on Mineral Metabolism During Pregnancy and Its Bearing on Disposition to Rickets and Dental Caries. *Acta paediat.* 12: (supp. 2) 1-116, 1931.

48. Finola, G. C.; Trump, Ruth A., and Grimsom, Mozelle: Bone Changes in the Fetus Following the Administration of Dicalcium Phosphate and Viosterol to the Pregnant Mother. *Am. J. Obst. & Gynec.* 34: 955 (Dec.) 1937.

49. Mellanby, May: Diet and the Teeth: III. The Effect of Diet on Dental Structure and Disease in Man. Medical Research Council, Special Report Series, no. 191, London, His Majesty's Stationery Office, 1934.

50. Drain, C. L.; Plass, E. D., and Oberst, W. F.: Prevention and Control of Dental Caries in Pregnant Mothers. *J. Dent. Research* 13: 233 (April) 1933.

51. Garry, R. C., and Stiven, D.: A Review of Recent Work on Dietary Requirement, with an Attempt to Assess Human Nutrition. *Rev.* 5: 855 (April) 1936.

52. Macy, Icie G.: Evaluation of Maternal and Infant Development. *Am. J. Obst. & Gynec.* 1: 1-116, 1936.

53. Hunscher, Helen A.; Bates, Mary E.; Bouquet, Priscilla; Macy, Icie G., and Johnston, J. A.: A Consideration of the Nutritive State in the Metabolism of Women During Pregnancy. *J. Nutrition* 13: 263 (March) 1937.

54. Coons, Callie Mae; Schiefelbusch, A. T.; Marshall, G. B., and Coons, R. R.: Studies in Metabolism During Pregnancy. Oklahoma Agriculture and Mechanical College, Agriculture Experiment Station, Bulletin 223, March, 1935.

55. Coons, Callie Mae, and Coons, R. R.: Some Effects of Cod Liver Oil and Wheat Germ on the Retention of Iron, Nitrogen, Phosphorus, Calcium and Magnesium During Human Pregnancy. *J. Nutrition* 10: 289 (Sept.) 1935.

56. Toverud, K. U., and Toverud, G.: Studies on Mineral Metabolism During Pregnancy and Its Bearing on Disposition to Rickets and Dental Caries. *Acta paediat.* 12: (supp. 2) 1-116, 1931.

57. Macy, Icie G.; Hunscher, Helen A.; Nims, Betty, and McCosh, Sylvia S.: Metabolism of Women During the Reproductive Cycle: I. Calcium and Phosphorus Utilization in Pregnancy. *J. Biol. Chem.* 86: 17 (March) 1930.

58. Hummel, Frances C.; Hunscher, Helen A.; Macy, Icie G., and Toverud, K. U.: A Continuous Case Study of a Multipara. *J. Nutrition* 11: 202 (March) 1936.

53. Macy, Icie G.; Hunscher, Helen A.; McCosh, Sylvia S., and Nims, Betty: Metabolism of Women During the Reproductive Cycle: III. Calcium, Phosphorus and Nitrogen Utilization in Lactation Before and After Supplementing the Usual Home Diets with Cod Liver Oil and Yeast. *J. Biol. Chem.* 86: 59 (March) 1930.

54. Hunscher, Helen A.: Metabolism of Women During the Reproductive Cycle: II. Calcium and Phosphorus Utilization in Two Successive Lactation Periods, *ibid.* 86: 37 (March) 1930.

55. Toverud, K. U., and Toverud, G.: Footnote 52.

56. Telfer, S. V.: Mineral Metabolism in Infancy: I. The Mineral Constituents of Human Milk and Cow's Milk. *Glasgow M. J.* 113: 246 (May) 1930.



Animal experiments wherein large amounts of vitamin D were given to pregnant rats show that, if the maternal diet is good, the calcium and phosphorus content of the bones of the young rats is increased above that of the control group;<sup>55</sup> large doses of viosterol together with a deficient diet result in decreased content of mineral in the bones of young.<sup>56</sup> Subtoxic doses of vitamin D given to rats receiving a diet deficient in minerals during gestation increase the calcium and phosphorus content of the offspring over that of young born of mothers given the deficient diet without added vitamin D.<sup>56</sup> Hypervitaminosis D has not been reported in women during pregnancy and lactation; consequently the effect is unknown.

#### SUMMARY

Individual variation in ability to utilize the calcium and phosphorus of the diet without added vitamin D exists at all age periods. A high proportion of infants have poor retention and only a very few retain an ample amount without vitamin D. As the age increases persons in increased proportion are able to retain adequate amounts of these minerals without vitamin D, but at all age periods some persons are found who are not efficient. In defining a standard for the vitamin D requirement it seems desirable to state an amount which will be satisfactory for those who are less efficient. Vitamin D tends to decrease the range of retention of calcium and phosphorus in study groups by increasing the retention of those least efficient to approximate that of those most efficient. Vitamin D ordinarily does not increase the retention of those who have high retention without it.

Vitamin D does not decrease the minimum requirement of calcium and phosphorus and this vitamin cannot produce a good retention in a person who is ingesting less than the requirement for these minerals. Determination of the need for vitamin D must be based on studies of persons who are receiving an ample intake of calcium and phosphorus.

It appears from available evidence that vitamin D is not as well utilized on a unit for unit basis from the more concentrated preparations as from those preparations in which it is more widely dispersed. The most desirable concentration has not been determined, but apparently the concentration found in cod liver oil is as effective as any lesser concentration studied.

On the basis of the preceding premises and of an evaluation of data in the literature the requirement for vitamin D for different age periods and conditions has been tentatively postulated. These requirements are considered in terms of a concentration of vitamin D no greater than is found in average high grade cod liver oil.

The vitamin D requirement of the full term artificially fed baby is probably between 300 and 400 units a day.

Normal babies receiving human milk require less vitamin D than do babies receiving cow's milk, but how much less is not known. However, vitamin D is necessary for many and useful for most breast-fed babies. It would seem wise to prescribe for them the same amount as is required by artificially fed babies.

It is tentatively considered that prematurely born babies may require twice as much vitamin D as full term babies during the early period of most rapid

growth, after which time the requirement should be the same as for babies born at term.

For children between infancy and adolescence a daily allowance of at least 750 cc. of milk together with from 300 to 400 units of vitamin D permits consistently ample retention of calcium and phosphorus. The optimal quantity of vitamin D cannot be stated accurately, though it appears probable that the total quantity needed is neither greater nor less than the amount required for the infant.

For adolescents a need for vitamin D exists, but insufficient data are available to permit an estimate of the quantity required. It seems probable that from 300 to 400 units a day would be satisfactory.

For adults the optimal amount of vitamin D, if a need exists, remains to be determined.

It appears strongly advisable to give vitamin D during pregnancy and lactation. The optimal amount is not known. During lactation the requirement may be greater than at any other period of life and a daily dosage of 800 units or more is suggested, together with an abundant intake of calcium and phosphorus.

### Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS. HOWARD A. CARTER, Secretary.

#### ELECTROSTATIC AIR CLEANER ACCEPTABLE

Manufacturer: Westinghouse Electric Manufacturing Company.

Distributor: Atmospheric Electric Filter Corporation, Woolworth Building, New York.

The Electrostatic Air Cleaner is designed, according to the manufacturer, to remove smoke, dust, pollens and other impurities from outside or inside air by an electrostatic filter system. The portable unit comes in a walnut or ivory cabinet, 34 inches long by 34 inches high by 18 inches deep, weighing approximately 150 pounds. It may be installed in a window. Connection for the fresh air supply is made by a sliding window-block arrangement. The firm states that the unit will also aid in eliminating drafts and street noises.

The filter operates, it is said, by ionizing the dust particles in a chamber containing three high tension wires. Negative charges are imparted to the dust particles. Then, as they move on and pass through the collector plates bearing positive charges, the ionized particles are drawn toward the plates and stick to them. The air is drawn through the cleaning unit by means of a fan which is not noisy in operation. The cleaner does not remove all gases and vapors, since some particles are too minute to be deposited in the foregoing manner. The integral part containing the collector plates where the dust and pollen lodge may be removed and a hose turned on it for cleaning purposes.

An investigator acceptable to the Council tested the unit for efficiency in removing pollen from the air. The tests were made during the hay fever season of 1937.

Slides coated with petrolatum were exposed at the outlet of the unit and were examined for pollen granules. Slides were also exposed outdoors to obtain the pollen count for the same period of time by the method described by O. C. Durham. On only one or two occasions were any pollen granules observed on the slides exposed at the outlet ducts; never more than two per unit area of 1 square centimeter in a twenty-



Electrostatic Air Cleaner.

55. Nicholas, H. D., and Kuhn, Evelyn M.: Role of Calcium, Phosphorus and Vitamin D in Pregnancy, *J. Clin. Investigation* 11:1313 (Nov.) 1932.

56. Sentag, L. W.; Munson, Paul, and Huff, Elton: Effects on Fetus of Hypervitaminosis D and Calcium and Phosphorus Deficiency During Pregnancy, *Am. J. Dis. Child.* 51:302 (Feb.) 1936.

four hour period, while the pollen count outdoors during this period averaged from 100 to 400 granules per square centimeter.

The unit was put out of service August 29 and was again started on the night of September 6, with a fresh batch of slides at the outlet duct prior to operation. These slides were again changed within one hour and showed several pollen granules and dust particles ranging as high as from 12 to 15 microns in diameter. However, slides placed in position at the outlet duct as the first batch were removed did not show any pollen and very little dust within the succeeding twenty-four hours. The pollen count at this particular time, however, was quite low. One would assume from these results that, during the time the Electrostatic Air Cleaner was turned off, pollen and dust which had adhered to the plates had dropped to the bottom of the cell and with the first blast of air had been blown through.

The unit was tested for its air volume by the anemometer method. The average of a group of readings with the damper opened gave 211 cubic feet per minute or 12,860 cubic feet per hour. With the damper shut, that is, with the recirculation in effect, the readings were 214 cubic feet per minute or 12,900 cubic feet per hour. The investigator's conclusion was that this filter is efficient for removal of a large portion of pollen and dust particles from the air.

In view of the foregoing report, the Council on Physical Therapy voted to accept the Electrostatic Air Cleaner for inclusion in its list of accepted devices.

#### SPENCER MATERNITY SUPPORTS ACCEPTABLE

Manufacturer: Spencer Corset Company, Inc., New Haven, Conn.

The Spencer Maternity Supports are designed to aid in upholding the back and abdomen during pregnancy and are adaptable for increases in size of figure. The firm claims that the garment is built to place the weight of support on the pelvic girdle, thus relieving lumbosacral strain. Each support is made according to individual measurements submitted by the corsétière, the saleswoman for the company. Light weight flexible material is incorporated in the finished product, which may be laundered. The boning in Spencer supports is of special steel covered with a material claimed to be impervious to moisture. This boning is called Spencebone, because it is manufactured exclusively for the firm and from its own formula.

The abdomen is supported by a nonelastic adjustable inner section, which is joined to the nonelastic backing by three straps on either side. The backing is made high and long enough for the individual figure. Abdominal uplift is regulated by adjustment of the lower straps. Because special elastic lacers are used, the only daily adjustment necessary is that of the inner supporting section.

The supporting section and straps are covered by the front part of the corset, thus presenting a smooth surface for the outer clothing to fit over. The section of the material to which eyelets are attached for lacers is placed so that the imprint of the lacers will not be insinuated onto the outer clothing. One elastic lacer extends the full length of the garment in front; there is another lacer at each side front extending from the top to the groin line. These are adjusted only as increasing size demands. Hooks and eyes are used for fastening the garment.

According to the Spencer Corset Company, these supports are sold through their sales representatives (women), known as Spencer corsétières. The corsétières are not permitted to diagnose; they are required to cooperate with the physician by fitting the type of support he prescribes. They are also instructed to arrange for the physician's inspection of a completed and fitted garment, whenever it is possible. All garments are designed for the individual patient. The company claims that no stock garments are made or sold.

The Spencer Corset Company has informed the Council that it has never paid commissions or rebated any percentage of the selling price to physicians on any of its merchandise, and assures the Council that it will not do so in the future. Furthermore, the manufacturer has stated that the corsétières

are under instructions not to pay commissions or gratuities of any kind and that any violation of this rule would cause them to lose their franchises.

These garments have been investigated by reliable physicians, who state that they render satisfactory service to obstetric patients.

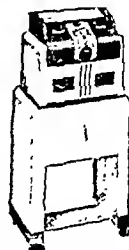
In view of the foregoing report, the Council on Physical Therapy voted to accept the Spencer Maternity Support for inclusion in its list of accepted devices.

#### BURDICK SWD-50 SHORT WAVE DIATHERMY ACCEPTABLE

Manufacturer: The Burdick Corporation, Milton, Wis.

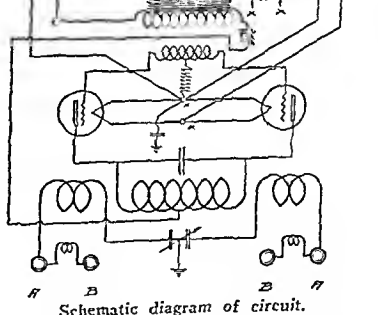
The Burdick SWD-50 portable short wave diathermy unit is designed for medical diathermy and for minor electrosurgery. Standard accessories are available for cutting and coagulating purposes. The unit is made of furniture steel with all metal welded construction. The portable unit weighs approximately 60 pounds, while the lower cabinet weighs 35 pounds.

A two-tube push-pull self-rectified circuit is utilized with loose inductive coupling to patient's electrodes. The wavelength is 15 meters. The patient's circuit is turned by a wide range variable resonance control. Two patient's outlets are provided, one for use with large pads and average spacing, one for small pads with thicker spacing.



The firm claims that the unit has an output of 325 watts as measured by a lamp load, photoelectric cell and wattmeter. The input is approximately 720 watts. These claims were confirmed by an investigator acceptable to the Council. Transformer temperature rise and the rise at various levels within the cabinet after a two hour run at full load were within the limits of safety. Radio interference is minimized by the type of construction and inclusion of an inductance capacity filter in the line supply.

Six tests, performed by a reliable investigator, were submitted as evidence of the ability of the SWD-50 unit to produce heat deep in human tissues. The technical procedure for making the tests was that recommended by the Council on Physical Therapy. Six observations were made with the cuff technic. These were



Schematic diagram of circuit.

23½ by 2½ inches in dimension. The average distance of the cuffs, center to center, was 8½ inches. Felt and four thicknesses of a hand towel were used to secure a necessary five-eighths inch skin electrode distance. Skin tolerance was not exceeded. The averages for the six tests are as follows:

Average of Six Observations, Cuff Technic			
Deep Muscle		Oral	
Initial	Final	Initial	Final
98.0	106.1	98.6	99.0

The unit was tested clinically by a reliable investigator and he reported that it produced satisfactory clinical results in a large and mixed group selected for study when the cuff technic is used.

In view of the foregoing report, the Council on Physical Therapy voted to accept the Burdick SWD-50 Short Wave Diathermy Unit for inclusion in its list of accepted devices.

## Council on Foods

### ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION AND WILL BE LISTED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED.

FRANKLIN C. BING, Secretary.

#### (1) NUTRADIET YELLOW CLING PEACHES PACKED IN WATER

#### (2) NUTRADIET SLICED YELLOW CLING PEACHES PACKED IN WATER

*Distributor.*—The Nutradiet Company, a subsidiary of S & W Fine Foods, Inc., San Francisco.

*Description.*—Canned, peeled, halved and sliced Yellow Cling peaches packed in water without added sugar.

*Manufacture.*—Tree-ripened Yellow Cling peaches, from trees on which no insecticide spray is used after the blossoms appear, are mechanically cut in halves and the pits are removed. The fruit is immersed in a 2 per cent solution of caustic soda to remove the skins, thoroughly washed, inspected, graded [(2) sliced] and packed in cans. Water is added and the containers are exhausted in the presence of steam, sealed and processed in boiling water.

*Analyses* (submitted by manufacturer).—(1) Moisture 92.8%, total solids 7.2%, ash 0.2%, fat (ether extract) 0.1%, protein ( $N \times 6.25$ ) 0.4%, crude fiber 0.25%, carbohydrates other than crude fiber (by difference) 5.85%, titratable acidity as citric and/or malic acid 0.4%. (2) Moisture 93.1%, total solids 6.9%, ash 0.2%, fat (ether extract) 0.1%, protein ( $N \times 6.25$ ) 0.3%, crude fiber 0.23%, carbohydrates other than crude fiber (by difference) 5.8%, titratable acidity as citric and/or malic acid 0.3%.

*Calories.*—(1) 0.26 per gram; 7 per ounce.

(2) 0.25 per gram; 7 per ounce.

*Claims of Manufacturer.*—For diets in which sweetened fruit is proscribed.

#### SUNFILLED BRAND CONCENTRATED ORANGE JUICE

*Manufacturer.*—Citrus Concentrates, Inc., Duncdin, Fla.

*Description.*—Canned concentrated orange juice prepared from Florida oranges.

*Manufacture.*—Tree-ripened sound oranges are inspected, washed and mechanically split. The juice is extracted by gentle pressure, strained, evaporated to about one tenth its original volume, automatically filled into cans and sealed under reduced pressure.

*Analysis* (submitted by manufacturer).—Moisture 24.0%, total solids 76.0%, ash 2.7%, protein ( $N \times 6.25$ ) 3.5%, reducing sugar as invert 26.0%, sucrose 31.3%, carbohydrates (by difference) 63.3%, citric acid 6.5%, vitamin C (iodine titration) 2.5 mg. per gram, specific gravity 1.369.

*Calories.*—2.67 per gram; 76 per ounce.

*Vitamins.*—The concentrate, when diluted with 9 parts of water by volume, furnishes approximately 645 international units of vitamin C per hundred grams of solution.

#### MULL-SOY

*Manufacturer.*—The Muller Laboratories, Baltimore.

*Description.*—A food preparation for use as a substitute for milk in feeding infants, older children or adults who are sensitive to the proteins of cow's milk. Contains soy bean flour, soy bean oil, dextrose, sucrose, calcium phosphate, sodium chloride, calcium carbonate and cod liver oil concentrate.

*Manufacture.*—The soy bean flour ingredient is prepared by the "expeller" process, in which soy beans are heated under steam pressure, split and hulled, and again heated. The oil is pressed out and the resulting cake is ground to flour. Formula proportions of the solid ingredients are thoroughly mixed

with suitable amounts of water and heated; soy bean oil and cod liver oil concentrate are added and the mixture is homogenized, heated, and filled into cans. The sealed cans are heat processed.

*Analysis* (submitted by manufacturer).—Moisture 75.0%, total solids 25.0%, ash 2.0%, fat (ether extract) 7.8%, protein ( $N \times 6.25$ ) 6.0%, crude fiber 0.3%, sucrose 1.5%, dextrose 3.3%, total carbohydrates other than crude fiber (by difference) 8.9%, calcium (Ca) 0.26%, phosphorus (P) 0.22%, sodium (Na) 0.16%.

*Calories.*—1.3 per gram; 37 per avoirdupois ounce; 40 per fluidounce.

*Vitamins.*—Vitamin A, 4.4 international units per gram; 2,000 international units per quart when diluted with an equal volume of water. Vitamin B<sub>1</sub>, 0.2 international unit per gram; approximately 100 international units per diluted quart. Vitamin D, 0.9 international unit per gram; approximately 400 international units per diluted quart.

#### MRS. PALEY'S BABY FOOD--STRAINED EVAPORATED PEACHES

*Manufacturer.*—Paley-Sachs Food Company, Houston, Texas.

*Description.*—Cooked, sieved, sulfured dried peaches, packed with added dextrose.

*Manufacture.*—Dried, sulfured peaches are washed, soaked for twelve hours, precooked in pressure cookers with added dextrose, sieved, filled into glass jars, vacuum sealed and heat processed.

*Analysis* (submitted by manufacturer).—Moisture 73.5%, total solids 26.5%, ash 1.0%, fat (ether extract) 0.3%, protein ( $N \times 6.25$ ) 1.6%, reducing sugars as dextrose 11.9%, sucrose 7.3%, crude fiber 0.5%, total carbohydrates other than crude fiber (by difference) 23.1%, calcium (Ca) 0.022%, phosphorus (P) 0.043%, iron (Fe) 0.003%, sulfur dioxide (SO<sub>2</sub>) 0.0156%.

*Calories.*—1 per gram; 28.4 per ounce.

#### HEKMAN'S 100 PER CENT WHOLE WHEAT RUSK

*Manufacturer.*—Dutch Tea Rusk Company, Holland, Mich.

*Description.*—Round slices of toast prepared from whole wheat flour, milk, brown sugar, eggs, vegetable shortening, yeast, malt extract, salt and soda.

*Manufacture.*—A dough is made of the foregoing ingredients and allowed to ferment. The pieces of dough (buns) are baked in round covered pans, sliced and the halves dried, toasted and packed in cartons.

*Analysis* (submitted by manufacturer).—Moisture 8.6%, total solids 91.4%, ash 1.8%, fat (ether extract) 8.9%, protein ( $N \times 6.25$ ) 13.6%, crude fiber 1.9%, total carbohydrates other than crude fiber (by difference) 65.2%, iron 0.0057%.

*Calories.*—3.95 per gram; 112 per ounce; about 60 per rusk.

#### MRS. PALEY'S BABY FOOD-- STRAINED TOMATOES

*Manufacturer.*—Paley-Sachs Food Company, Houston, Texas.

*Description.*—Canned, sieved tomatoes, slightly seasoned with salt.

*Manufacture.*—Fresh tomatoes are thoroughly washed, trimmed, cooked until soft and sieved. The sieved tomatoes are reduced to the desired consistency by cooking in the absence of air, filled into glass jars, vacuum sealed and heat processed.

*Analysis* (submitted by manufacturer).—Moisture 93.5%, total solids 6.5%, ash 0.1%, fat (ether extract) 0.1%, protein ( $N \times 6.25$ ) 1.1%, reducing sugars as dextrose 2.8%, sucrose 0.6%, crude fiber 0.3%, total carbohydrates other than crude fiber (by difference) 4.9%, calcium (Ca) 0.0186%, phosphorus (P) 0.015%, iron (Fe) 0.0018%.

*Calories.*—0.2 per gram; 6 per ounce.

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, AUGUST 20, 1938

## THE NEED OF SPECIAL TRAINING IN THE DIAGNOSIS AND TREATMENT OF CANCER

The recent movement for the organization of cancer clinics is based on the principle that the best results can be obtained in the diagnosis and treatment of the cancerous diseases by formally organized and close cooperation between the pathologist, the surgeon and the radiotherapist. The personnel, the facilities and the equipment necessary for such cooperation can best be assembled and maintained only in special centers. Existing hospitals are, of course, the logical places for cancer clinics. Certain minimum standards for these clinics have been established by the American College of Surgeons including, in addition to the personnel and facilities, provisions for accurate records and follow-up services. Approved hospitals of 100 beds or more have been urged to consider the formation of cancer clinics.

The organization of cooperative services is necessary to obtain the maximum efficiency in the diagnosis and treatment of cancer. The highly expert and specialized nature of the diagnosis, the surgery and the radiation treatment inevitably requires the concentration of such services in special centers. Last year the American College of Surgeons carried on its approved list 240 cancer clinics, 144 of which are integral parts of general hospitals.<sup>1</sup> The number of approved and approvable clinics is increasing. Anticancer activities on the part of state departments of health will no doubt result in the formation of more cancer centers under similar auspices. Cancer is now accepted as a public health problem of the first magnitude. All cancer patients, those who cannot meet the cost as well as those who can, should receive the benefits of the best that can be done for them.

1. Hospitals in the United States and Canada Conducting Cancer Clinics Which Are Approved by the College, Bull. Am. Coll. Surgeons 22:35 (Oct.) 1937.

At the recent commemoration of the twenty-fifth anniversary of the American Society for the Control of Cancer, it was emphasized not only that the formation of cancer clinics should be furthered but that special training should be urged for physicians who wish to devote themselves wholly to cancer in their practice. Such specially trained physicians will be needed increasingly to carry on the modern diagnosis and treatment of cancer in public and private institutions. At present, eleven hospitals offering in all only thirty-four positions are approved by the American Medical Association<sup>2</sup> for "residencies in malignant diseases." Of these hospitals, services of thirty-six months are offered by one, of twenty-four months by one, of sixteen months by two and of twelve months by seven. Obviously the existing facilities for postgraduate training in the diagnosis and treatment of cancer are inadequate, but they could be greatly increased by comparatively little effort. Time should not be lost in organizing thorough and comprehensive courses in suitable medical schools and hospitals. The National Cancer Institute Act, approved Aug. 5, 1937, provides for the training and instruction of qualified physicians "in all technical matters relating to the diagnosis and treatment of cancer." Evidently the framers of the act recognized fully the great need for such training.

## TRANSFUSION OF MASSIVE DOSES OF CADAVER BLOOD BY THE CON- TINUOUS DRIP METHOD

S. S. Yudin,<sup>1</sup> first to introduce the use of cadaver blood for transfusion, has recently summarized the advantages of cadaver blood: (1) The amount of blood that may be obtained from a single donor is large; (2) it does not have to be paid for; (3) because of fibrinolysis which takes place in the blood of patients dying a sudden death, there is no necessity for adding sodium citrate solution; (4) the number of reactions is markedly diminished because of the absence of conserving fluids; (5) the Wassermann reaction is performed on the blood which is to be transfused, while the possibility of syphilis in a living donor is not always excluded, and (6) the necropsy which is performed on the cadaver before its blood is accepted guarantees the innocuousness of the blood, since it offers the opportunity of examining the donor for signs of tuberculosis, malaria, septic foci and secondary signs of syphilis.

The keeping of large reserves of blood for instant use in emergencies proved to be of definite advantage in the work of the Central Institute of Emergency Surgery at Moscow. Blood without admixture can be preserved

2. Hospital Service in the United States, J. A. M. A. 110:959 (March 26) 1938.

1. Yudin, S. S.: Drip Transfusion of Massive Doses of Cadaver Blood, Vestnik khir. 55, February 1938.

for longer periods than blood to which preserving fluids have been added. The number of mild reactions in 2,000 transfusions of cadaver blood amounted to 5 per cent. Yudin is convinced that the effectiveness of cadaver blood is not in any way inferior to that of blood from living donors.

The report of Marriott and Kekwick,<sup>2</sup> working in the Middlesex Hospital, London, on the results obtained from administering massive doses of blood by the continuous drip method in cases characterized by a severe acute anemia and a lowered regenerative hematopoietic function, stimulated Yudin to adopt this method in his employment of cadaver blood in a group of similar cases. His experience with twenty-five cases of advanced cancer gave exceedingly encouraging results. Patients who were the poorest risks because of advanced cachexia and profound anemia could be improved before the operation by massive blood transfusions. The method was likewise applied in twenty-five cases of profusely bleeding gastroduodenal ulcers.

The method presents certain technical difficulties, the principal one of which is the tendency for the corpuscles to sedimentate and block the drip bulb. Marriott and Kekwick have overcome this difficulty by bubbling a continuous stream of filtered oxygen through the blood, thus accomplishing a continuous stirring. Another difficulty is the not infrequent occurrence of phlebitis in the arm. According to Yudin, the introduction of 0.5 liter of blood raises the hemoglobin of an adult by 9 to 10 per cent. Gravely exsanguinated patients may be given the first liter of blood in fifteen or twenty minutes. However, the tempo of transfusion after that must be slowed. It is not advisable to raise the hemoglobin content more than 10 per cent every four hours. This concerns particularly patients who are not bleeding and patients with sclerosis and hypertension. Ordinarily, from forty to forty-five drops of blood is transfused every minute, or from 100 to 150 cc. every hour. Doses as high as 6 liters may be given in the course of two or three days.

Despite the exceedingly good results obtained with the method, Yudin does not feel that this is necessarily the solution of the problem. He believes that the same results may be obtained by what he calls the fractional method. Thus, a patient may be given 500 cc. of blood before the operation and from 1 to 1.5 liters after the operation in a course of one hour by the usual method. Additional amounts of 500 cc. may be given every succeeding twelve hours two or three times. He sees here another advantage in the use of cadaver blood, namely that it requires a lesser number of donors, thus giving greater assurance as to the compatibility of the blood than when the blood is taken from living donors.

## INFECTIVITY OF CALCIFIED TUBERCULOUS LESIONS

Whether or not calcified foci from childhood infections with tuberculin are possible sources of endogenous reinfection in later life has been a disputed question for a half century. In 1884 Dejerine<sup>1</sup> studied calcified lesions in twelve tuberculous persons dying in the fourth, sixth, seventh and eighth decades of life. He failed to find tubercle bacilli in the calcified lesions. Material from four of these lesions was injected into guinea pigs with uniformly negative results. From these scanty data Dejerine concluded that the infectious agent disappears quantitatively from tuberculous lesions as soon as calcification is complete. Quite different results were subsequently reported by Rabinowitsch,<sup>2</sup> Schmitz,<sup>3</sup> and others who tested the guinea pig infectivity of thirty-two calcified foci from human necropsies and obtained positive results in seventeen cases.

Doubt as to the reliability of previous conclusions was afterward expressed by Griffith,<sup>4</sup> who found that in 176 trials chronic tuberculous tissues failed to infect guinea pigs, although acid-fast bacilli were readily demonstrated by animal inoculation. By animal inoculation Opie and Aronson<sup>5</sup> demonstrated tubercle bacilli in apparently noninfected portions of tuberculous lungs, suggesting that the alleged infectivity of calcified foci was due to slips in technic or unavoidable contamination of the calcified area.

Since there is at present no unanimity of opinion as to the probable infectivity of chronic tuberculous lesions, Feldman and Baggenston<sup>6</sup> of the Mayo Clinic restudied this problem with the latest technical methods. Necropsy material was obtained from sixty-eight persons ranging in age from 7 to 90 years who had died from causes other than tuberculosis. Evidence of previous pulmonary infection with tubercle bacilli was observed in all cases, the presumptive childhood tuberculosis appearing as encapsulated, caseous or calcified areas in the pulmonary tissues or the tracheobronchial lymph nodes. These encapsulated lesions were excised and emulsified in sterile sand and the emulsions thus obtained planted on two or more particularly favorable culture mediums. From two to six duplicate guinea pigs were inoculated subcutaneously with 1 to 2 cc. of each sample. All animals that died within twenty-one days were discarded, death presumably being due to primary or allergic toxicity of the emulsion or to nontuberculous virus or bacterial infection. The surviving guinea pigs were killed at the end of from eight to fourteen weeks and meticulously examined macroscopically, microscopically and culturally for evidence of tuberculosis.

1. Dejerine, J. J.: *Compt. rend. Soc. de biol.* 36: 500, 1884.

2. Rabinowitsch, Lydia: *Berl. klin. Wchnschr.* 44: 35, 1907.

3. Schmitz, Eugen: *Frankfurt. Ztschr. f. Path.* 3: 88, 1909.

4. Griffith, A. Stanley: *J. Path. & Bact.* 32: 813 (Oct.) 1929.

5. Opie, Eugene L., and Aronson, J. D.: *Tubercle Bacilli in Latent Tuberculous Lesions and in Lung Tissue Without Tuberculous Lesions*, *Arch. Path.* 4: 1 (July) 1927.

6. Feldman, William H., and Baggenston, Archie H.: *Am. J. Path.* 14: 473 (July) 1938.

2. Marriott, H. L., and Kekwick, Alan: *Continuous Drip Blood Transfusion*, *Lancet* 1: 977 (April 27) 1935.



Positive results were obtained in only one of the sixty-eight chronic tuberculous foci studied. In none of the other foci was the presence of tubercle bacilli demonstrated by either cultural or inoculation methods. The authors concluded from this evidence that in the majority of cases the "primary complex" in tuberculosis passes through an involutional process unfavorable to the continued viability of *Mycobacterium tuberculosis*. In their opinion endogenous reinfection from definitely capsulated, sclerotic, caseous or calcified tuberculosis of childhood is unlikely to occur.

## Current Comment

### OUTBREAK OF GASTRO-ENTERITIS IN MILWAUKEE AND VICINITY

During February 1938, according to a report of the Wisconsin State Board of Health,<sup>1</sup> about 4.5 per cent of the population of Milwaukee was attacked by acute gastro-enteritis. The onset of an attack was usually abrupt and generally accompanied by nausea or vomiting and followed by abdominal pain, diarrhea or both. Vomiting usually subsided after a few hours, while diarrhea often persisted for from a few hours to a week. The stools of the patients had no striking characteristics. The incubation period, according to available evidence, varied from six hours to six days but most commonly was from one to two days. The outbreak apparently became definitely established about February 7 and waned after February 21. It involved surrounding communities as far north as Port Washington and as far south as Kenosha. Epidemiologic investigation served to eliminate in a reasonably satisfactory manner food and milk as a source of the outbreak. All the communities involved in the epidemic of gastro-enteritis with one exception obtained water supplies from Lake Michigan. The charting of the daily onset of the cases in relation to the turbidity of the water, raw water *B. coli* index, chlorine application, residual chlorine, wind direction, and similar factors revealed that the most unsatisfactory water condition existed during the period from February 11 to 14, when high bacterial counts, maximum *B. coli* index and maximum turbidity were reported. The outbreak coincided with the period of spring freshets; that is, the first heavy run off due to thaws and rains. This correlation pointed directly to increased pollution of the lake as the cause. The report concluded that the water facilities available in the city of Milwaukee at that time were inadequate for purification of water for an emergency of the kind experienced. Negligence could not be charged to the health and water works authorities, since chlorine residuals appeared ample at all times and the *B. coli* index of the tap water was well below the accepted treasury standards for a safe drinking water. Control of chlorination should be such as to assure at all times as effective sterilization as is possible with this process and to maintain the *B. coli*

index below the indicated maximum of 0.2. Tests for residual chlorine should be made at definite intervals throughout each twenty-four hour day and should be such that color and turbidity will not result in false readings. From a bacteriologic standpoint it appears desirable that present procedures be modified so that it is possible to obtain a lower *B. coli* index with individual samples than is given by present methods. Should the water fail to meet the suggested tentative standards, the health of the consumers should be further safeguarded by the boiling of all drinking water.

### VISUAL STANDARDS FOR OPERATING MOTOR VEHICLES

Recognizing the increasing necessity for greater care in the operation of motor vehicles on the highways, the House of Delegates of the American Medical Association at the recent San Francisco meeting adopted the following resolution. The standards set forth were developed by the Section on Ophthalmology, where this program had been under consideration for many years:

*Resolved*, That the following be accepted as the approved American Medical Association standards:

#### A. For an Unlimited License:

1. Visual acuity with or without glasses of 20/40 Sn. in one eye and 20/100 Sn. in the other.
2. A form field of not less than 45 degrees in all meridians from the point of fixation.
3. The presence of binocular single vision.
4. Ability to distinguish red, green and yellow.
5. Night blindness not to be present.
6. Glasses when required be worn while driving and those employed in public transportation be provided with an extra pair.

#### B. Visual Standards for Limited License:

1. Visual acuity of not less than 20/65 Sn. in the better eye.
2. Field vision of not less than 60 degrees horizontally and 50 degrees vertically from point of fixation in one eye.
3. Diplopia not to be present.
4. Glasses to be worn when prescribed.
5. Coordination of eye, mind and muscle to be fully adequate to meet the practical visual road tests.
6. A limited license not to be issued to those employed in public transportation.

#### C. Renewals, Retesting and Reexaminations:

1. Renewals of license to be issued at least every third year. The applicant shall with each renewal make a declaration that he knows of no visual defect which has developed during the past year.
2. Retesting of acuity to be made at least every six years.
3. If any visual defects have developed, an examination by an ophthalmologist and the report thereof, to be required before reissuing the license.
4. License to state thereon the specific limitation for driving.

1. Edwards, A. C.; Warrick, L. F., and Muegge, O. J.: Report of Investigation of an Outbreak of Gastro-Enteritis, Milwaukee and Vicinity, February 1938, Wisconsin State Board of Health.

# ORGANIZATION SECTION

## MEDICAL PROBLEMS IN MINNESOTA

JAMES M. HAYES, M.D.  
MINNEAPOLIS

This era of depression and recession with its political and economic upheavals has necessarily complicated medical problems in this as well as every other state in the Union.

We were fortunate in Minnesota in having one of the best state medical organizations before the depression. Through this organization we were able to control the hysteria which seemed prevalent when federal finances first came into the state for aid to the needy sick. Dr. Chesley says that, in his thirteen years as head of the National Public Health Secretaries Association, never before has he seen so much outside interference in the practice of medicine as he has during the past four or five years.

There are about two and a half million people in the state of Minnesota. One-half million, or about one in every five, are now on some degree of relief. Practically none of these people are able to pay for medical care. About 50 per cent of them live in the rural communities, the other 50 per cent in the large cities.

Unfortunately the Twin Cities had long ago established the precedent of caring for the indigent sick without remuneration to the participating physicians. These are cared for mostly in the charity hospitals. In the past the burden was not so great, but the depression has made this burden almost unbearable. This situation should be changed, but so far the physicians have made no effort to have it changed and the public willingly accepts this free service. The same situation had existed in Chicago, but in 1936 the physicians there received nearly half a million dollars for their services in caring for the indigent sick.

In the rural communities the proportion of indigent is so great that it would be impossible for the physician to survive if he did not receive some remuneration for the care of these indigent sick. Accordingly, a minimum fee has been established for the care of these patients in the rural districts.

Our state medical association, as well as every unit throughout the state, feels that it is our duty to render to every sick person the best possible medical care regardless of his financial status.

Since federal aid first came into the state at the beginning of the depression, federal, state and county committees have spent many hours in an attempt to work out plans for the most efficacious care of the indigent sick.

Last year federal funds ceased to come in for direct relief. Since then the county, with assistance from the state, has taken care of all direct relief patients. The Works Progress Administration, a federal project, still exists. Those on direct relief who are able to work may be employed by the WPA. They receive a fixed salary from the federal government; this usually covers ordinary medical care. On Dec. 31, 1937, there were 182,896 individuals employed by the WPA. Other

federal agencies are the Farm Security Administration, National Youth Administration, CCC camps and Veterans Administration. The Farm Security Administration is making plans to finance medical care in connection with farm security loans. At present there are about 34,000 such persons in this state. Under the National Youth Administration, supplemental medical aid may be granted by county boards from direct relief funds in case of need. At present there are about 13,651 such youths. The CCC camps are taken care of medically by army medical reserve officers assigned to these camps and paid an annual salary. At present there are about 9,000 in such camps. Under the Veterans Administration the medical care is in charge of the Veterans Bureau. Those with service connected disabilities or, if indigent, with non-service connected disabilities, are cared for at federal expense. This one service is, unfortunately, much abused. There are about 11,000 now under such care.

The State Relief Agency is responsible for all those on direct relief. Up to about one year ago federal funds were available for this purpose, but since that time this relief has been administered by the eighty-seven county welfare boards of the state. The county funds are supplemented by state funds as determined by the State Relief Agency and the county boards. On Dec. 31, 1937, there were 152,854 on direct relief.

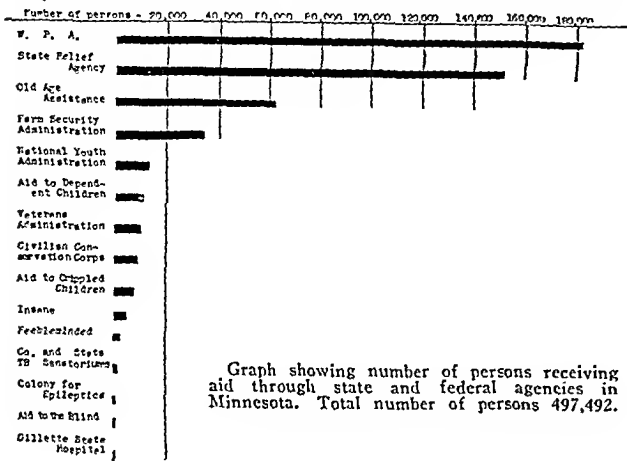
The State Board of Control is one of the important state agencies. This board has charge of the social security aids to the needy with the exception of federal old age assistance, unemployment compensation, maternal and child health services, and public health. Specifically, this board directs old age assistance, aid to dependent children, aid to the blind and services to crippled children. Funds are supplied by the federal government either outright or in matching state funds. Old age assistance is a monthly cash payment. The maximum amount per person is \$30 a month. This is paid only to the needy of 60 years or over who do not qualify for federal old age benefits. The county welfare board ordinarily determines who shall be granted this assistance and may be called on for financial assistance in emergency or special medical care. There are about 62,357 such persons in the state at this time. Mothers' aid and aid to dependent children is given when the county welfare board determines they have no other adequate means of support. There are at present 11,512 mothers and children on such relief.

The State Board of Control dispenses special funds for the care of children in need of specialized care. This fund is available only for children with special physical or mental diseases which may be benefited by special treatment. The state board may and often does use private charities of various kinds in the care of these patients. Aid to the blind takes the form of a monthly cash payment. The degree of blindness as well as the financial status of the patient determines the degree of financial assistance. The County Welfare

President's address, read before the eighty-fifth annual meeting of the Minnesota State Medical Association, Duluth, June 29, 1938.

Board, with the assistance of a special ophthalmologist, determines who shall receive this assistance and how much. Nearly 500 out of 3,300 blind in Minnesota today receive such assistance.

Perhaps no class among the indigent sick or disabled receive more attention and adequate special care than do the crippled children. Dr. Hilleboe, the medical man



Graph showing number of persons receiving aid through state and federal agencies in Minnesota. Total number of persons 497,492.

on the State Board of Control, has supervision of this as well as all other medical work under this board. It is estimated that there are nearly 10,000 crippled children under the age of 21 in Minnesota today. Everything known to medical science is employed in the care of these patients to cure them and render them useful citizens. Diagnostic clinics are held throughout the state at accessible points, where diagnoses, consultations and follow-up examinations may be made. Public health nurses are sent out to assist in every way possible. They help to locate new cases, organize clinics, administer physical therapy when directed, and see that the patient carries out specially prescribed treatment. The State Board of Control provides medical and hospital care for these patients from a special fund.

All state institutions come under the supervision of the State Board of Control. These include the feeble-minded, of whom there are 2,320; the insane, numbering 5,684; the tuberculous in county and state sanatoriums, 2,097; the Gillette State Hospital, now containing 221 patients, and the colony for epileptics, of which there are 1,104.

#### THE MINNESOTA DEPARTMENT OF HEALTH

The Minnesota Department of Health confines its work largely to prevention and control of disease. In carrying out this duty, it is necessary to train a large personnel who supplement and assist in the work of the practicing physician to a high degree. Through this organization the practicing physician is able to increase his efficiency in preventive medicine. To promote maternal and child welfare, postgraduate courses are held throughout the state. These courses are given by physicians highly trained in these specialties. The public health nurse comes in here to great advantage in assisting at these clinics and collecting the mothers and infants who especially need attention. The Public Health Department has long done yeoman service in the prevention of disease. Recently its efforts have increased many times. It

has made it possible for physicians from all parts of the state to have all cases of pneumonia readily typed and, when possible, furnish serum for the treatment of this disease.

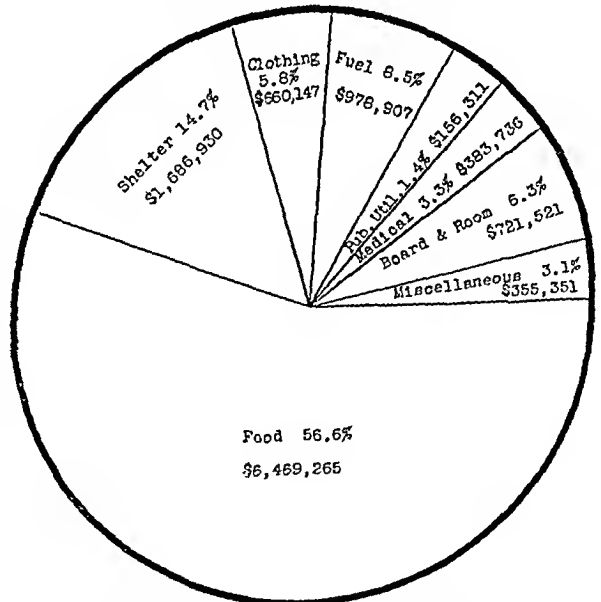
In conjunction with other medical organizations of the state, it has entered into a program of public education and control of venereal diseases. With renewed vigor it has promoted diphtheria immunization, smallpox vaccination and typhoid control. In combination with other health and medical organizations, it has established a program in Minnesota for the education of the public and the care of tuberculous patients that cannot be surpassed by any other state in the Union.

In addition to the federal, state and county agencies for medical care and prevention of disease, we have several important private agencies.

The Public Health Association collects large sums of money through the sale of the Christmas seals. These funds are used chiefly in the prevention and control of tuberculosis. They supplement the work of the aforementioned organization in tuberculosis work.

The Woman's Field Army for the Control of Cancer, together with the Cancer Committee from the State Medical Association, sponsors a program for public education in the need for early detection and treatment of cancer. The Association for Crippled Children and Adults sponsors a program for education concerning needs of crippled children and adults, particularly for training in handicraft.

The American Legion and Auxiliary are doing much in aiding the underprivileged child. They are just now sponsoring a campaign of educating and persuading the veteran to have a yearly physical examination.



How the relief dollar is spent in Minnesota. Statewide direct relief, year of 1937, \$11,423,379.73; drought relief \$215,827.48 is in addition to this amount.

Parent and teacher associations conduct a summer round-up of preschool children. Under this program these children receive a physical examination, and defects thus discovered are corrected if possible.

In listening to this discourse, one would naturally think that we have many overlapping agencies. Perhaps it would be simpler and possibly more efficacious to have all this health and medical work under a single supervisor.

Most of these organizations have been in existence for some time. Each has had a personnel trained for special work. Each has fitted well into the general plan now in operation. All are cooperating now with such a high degree of efficiency that perhaps no state in the Union has a better plan for caring for the indigent sick or disabled.

*Amount Spent for Luxuries and for Medical Treatment*

Motor car .....	\$150.00
Tobacco .....	67.00
Candy .....	37.00
Drinks and chewing gum.....	34.00
Radio and music.....	25.00
Physicians' fees .....	24.00

All will agree with me that, in the last analysis, matters of prevention and cure of disease must be directed and controlled by the practicing physician. The responsibility of direction and control of all this work must necessarily fall on the shoulders of our state medical association. To those who have held the reins in this organization in the past, credit must be given for having perfected this organization to the point at which it has been able efficiently to cope with all these difficult problems. We are convinced that little could be desired in improving the friendly cooperation we receive from all other organizations who take any part in the prevention and cure of disease.

The University of Minnesota, through its regular medical staff, has given much assistance to the practicing physician. The unique establishment of the continuation course in medicine at the university under the direction of Dr. O'Brien has been especially comforting to those who wish to go back to school and increase their knowledge of the latest developments in medical science.

So far I have spoken almost entirely of the indigent sick. Much has been said of the neglect of the near indigent or the low income group. Those who thus complain usually know little of the actual situation in the medical care of this class.

In Hennepin County we have established the so-called Medical Service Bureau. The main purpose of this organization is to care for any of this class whose income is just above that of the indigent class. This is an adjunct of the Hennepin County Medical Society. Members of the Hennepin County Medical Society have expressed a willingness to care for these patients for whatever they are able to pay. All relief agencies, charity hospitals or other charity organizations are requested to refer to this bureau any patients who apply for free medical care but who are not eligible because their income is slightly above that required for eligibility. During the years 1936 and 1937 only 147 patients applied to this bureau for care. The great majority of those thus referred went back to their family physicians, by whom they had been taken care of for years for little or no financial outlay. Contrary to reports, these patients are charged very little by the physician and they usually take plenty of time to pay, so that the burden is not so great as some informers would have it appear.

Complaints have been registered that portions of the state are inadequately supplied with physicians. A few years ago complaints came from the northern part of the state that certain patients in that area had died because they were unable to obtain medical care. This complaint came to the State Board of Control and was

passed on to us. A committee from the State Medical Association was sent to Bemidji one Sunday to investigate the situation. We called in physicians and others concerned. We found that none of these patients had suffered because of inaccessible physicians but rather because they did not avail themselves of the medical care at hand or refused to follow medical advice given them.

Even in the most isolated areas, physicians never failed to go when called. One of the cases cited was that of appendicitis. The patient visited the doctor and was advised to go to the hospital. Instead, he went home and failed to call the doctor until he was on the verge of death. In another instance the patient had diphtheria and failed to call the doctor until late complications had set in. The doctor visited him and administered antitoxin but the patient died as a result of complicating diseases.

We were unable to see how any other possible distribution of physicians could have given any better results.

Recent reports of the Committee on Costs of Medical Care, the American Foundation for the Study of Medical Care and the Committee of 430 Physicians have given the public the impression that the medical profession is having dissension within its ranks. Of course there is always some dissension, but this is

*Agencies Interested in Medical Aid in Minnesota*

<i>State Agencies</i>	<i>Federal Agencies</i>	<i>Private Agencies</i>
<i>State Board of Control</i>	<i>Works Progress Administration</i>	<i>Minnesota Public Health Association</i>
1. Department of Public Assistance:		
Old Age Assistance	Farm Security Administration	Women's Field Army of the American Society for the Control of Cancer
Mothers' Aid and Aid to Dependent Children	National Youth Administration	American Social Hygiene Association
Aid to Crippled Children		Minnesota Association for Crippled Children and Adults
Aid to the Blind	Citizens Conservation Corps	American Legion and Auxiliary
Fund for Child Welfare, Special Cases	Veterans' Administration	Parent and Teacher Associations
2. State Institutions:		Visiting Nurses Association
Feeble-minded		Private charities, including Catholic, Jewish and Lutheran charities
Insane		Fraternal organizations
County and State Tuberculosis Sanatoriums		Minnesota Hospital Service Association
Gillett State Hospital		Red Cross
Colony for Epileptics, Cambridge		
<i>Minnesota Department of Health</i>		
1. Division of Child Hygiene:		
Maternal and child welfare program (Postgraduate courses) for physicians financed by Social Security funds.		
Public Health Nursing		
2. Division of Preventable Diseases:		
Pneumonia Control program		
Venereal Disease program		
Diphtheria Immunization, Smallpox Vaccination, and Typhoid Control programs		
Tuberculosis program		
3. Public Health Units in Bemidji, Duluth and Mankato. Also, a Chipewia Indian health unit.		
4. Public Health education.		
<i>State Relief Agency</i>		

mostly because those who have never really treated the sick have taken it on themselves to tell the practicing physician how to practice. Some of the farm papers of the state have taken these remarks seriously, thus adding fuel to the flame. A radio speaker in Wisconsin, representing labor unions, spread the news over that state and Minnesota that the Committee on the Costs of Medical Care has shown that 46 per cent of those with a salary below \$1,200 and 42 per cent of those

with a salary below \$2,000 receive no medical care. Their information is false and misleading in that they have not shown need for medical care in these people. If some of them had practiced among these people they would realize that they usually have medical attention when they need it. I think I can frankly say that the majority of physicians in this association practice among this class the greater part of our time and know that these statements are false. Critics have not shown and cannot show that, under the panel system of England or any governmental system of medicine, do people in this class apply any more readily for medical care. The average physician knows that the patient does not stay away from the doctor because of cost but rather from negligence or fear of being told he has some serious condition.

The Minority Report of the Committee on the Costs of Medical Care indicates the impracticable suggestions of the Majority Report. The Majority Report gives the public the impression that the physician is receiving this large amount of money, when in reality this amount includes the cost of hospitalization, nursing care, dental care and all expenses entailed by the sick patient. An analysis of their figures shows that the physician received only 29.8 cents of each dollar. If they had given a comparative study of other expenses and especially that for luxuries, their conclusions would have seemed more just.

Dr. Scammon of the University of Minnesota has made such a study, which shows the amount spent by the average family per year for luxuries as compared to medical expense.

In addition to this, 125 million dollars is paid annually to various healers other than physicians, and 350 million dollars for "patent medicines." He has also shown that state medicine in Minnesota alone during the year 1934 would have cost \$20,000,000, or one-half the entire state tax levy.

Germany today has a completely government controlled system of medicine. The death rate in Germany is 12.3 per thousand of population, while in the United States it is 10.7 per thousand. Today 40 per cent of

the money paid out for medical care in Germany goes to politicians or lay supervisors, while only 60 per cent is received by the physician, who must assume all the responsibility for the care of the sick patient. Patients taken care of under this system will readily say they do not desire it, and statistics show that patients do not go to the physician any more readily than under our system.

The various committees mentioned have obtained their information from improper sources and therefore have arrived at incorrect conclusions.

The Board of Trustees of the American Medical Association has instituted a general medical survey of the entire United States. This survey is of great importance because it is being conducted by the only group of men capable of making such surveys of any value.

The practicing physician with the county as the unit will give the best possible information. This survey has already begun in the various counties of this state and the response from the physicians is encouraging.

There are always a few in this profession, as in other walks of life, who are anxious to try some new experiment. Those who favor government control of medicine know little of the actual working of government medicine from the point of view of the sick or the cost to the government. The so-called Medical Guild, or the system under which we practice medicine today, has existed for over 500 years. It has withstood the attacks of ambitious politicians and other outside aggressors and has satisfied the properly informed man that no better system has yet been proposed.

There is nothing in this system that will not lend itself to the most scientific advances, nor will it in any way prevent us from accepting any reasonable outside assistance from the federal government or from philanthropic individuals or organizations. We do not claim anything like perfection in this system, but we do defy any other profession or group of individuals to show greater activity in an attempt to better their work individually or as a group.

953 Medical Arts Building.

## BEWARE OF FALSE GODS!

*An Editorial from the Kansas City Medical Journal, August 1938*

If you are not familiar with the impending investigation of the A. M. A. at Washington, it is just that you have not read the recent issues of your own J. A. M. A. or you have not picked up the papers from the front lawn. The build-up of the government to dissipate and dilute the influence of the A. M. A. is showing progress in all directions. Members who have never participated in the organization and progress of the medical profession have been uncovered and minority groupings in different thought channels have been encouraged to display their antipathy. The barrage has been amplified by attacks from different bureaus and departments of the government. The scare and the threat of the law and the grand jury has not been overlooked.

The unfortunate part about the present situation is that while all of these attacks have some small elements of fact, when combined they tend to obscure the great values for the good of the whole people which organization in the profession has established. Enough wolves nipping at the heels and annoying a strong man will wear down any enthusiasm for existence.

One may declare a vacation for tradition for a period of time. One may wink at ethics for another period. One may argue that public policy demands a cessation of standards. Some

may insist that it is not necessary to balance the science and the art of medicine. There is no doubt but that you can tear down the structure of better and honest medicine in America if the fitness of change in the house of medicine is not judged by the profession itself. It is notorious that laymen are not able to choose medical attention or rather health attention by any measure of their judgment.

Only as the medical profession, through organized medicine and the A. M. A., has erected standards of medical education, eliminated quackery, qualified specialists and criticized hospital methods, etc., has the quality of medical practice of America developed. There has never been any police power to the A. M. A. There have never been any laws conferring any measure of penalty or legal action by the A. M. A. There has never been any big boss such as other groupings in business and sports have devised.

All of the progress of American medicine has been through the better education of physicians, through the moral persuasion of the Councils of the A. M. A. and through the traditional application of ethical standards. Such means are bound always to have more weight than mere laws. Public opinion has supported these various items of progress and gradually the quackery and charlatanism of America has faded into disrepute.



Medical schools with their huge establishments may feel that they are peculiarly fitted to practice mass medicine with governmental subsidies. Large non-profit metropolitan and even smaller hospitals may feel that they are ordained through the merit of their physical establishment to be the center for medical and health needs of their communities.

These modern factors of civilization and progress are prone to forget that it is really the personality and peerage of their medical staff that establishes their fame and their clientele. It is now apparent that even the physicians who staff such institutions sometimes arrogate to themselves an unusual ability to serve the people. Physicians in groups promptly believe that in their small union rests the *locum tenens* of Aesculapian lore.

All these things may be true. But one must realize that only a small minority of all the people can take advantage of such institutions and such groupings. The great majority of people

scattered over the country must be taken care of by the physicians of their locality. The quality of such medical care can only be maintained by supporting the progressive type of physician who keep up with the times and who does not indulge in unethical methods or tamper with traditional items of good medical manners. It is further maintained by a better distribution of well educated physicians.

These factors of medical progress are maintained by the inherent good will and the promotion of better standards by the Councils of the A. M. A. and other national medical organizations. If you dissipate the influence behind these standards, you are cutting out the foundations that are responsible for better medicine for all the people in America. One should not listen to the sirens who will cheer on those who are willing to scuttle the ship. Hold fast to those things that are good! Beware of false gods!

E. H. S.

## HEALTH PROBLEMS IN EDUCATION

SECOND SYMPOSIUM, HELD AT SAN FRANCISCO, JUNE 14, 1938

DR. ROBERT T. LEGGE, BERKELEY, CALIF., IN THE CHAIR

The Second Symposium on Health Problems in Education was arranged by the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association, with the cooperation of the following sections of the Scientific Assembly of the American Medical Association: Section on Pediatrics, Section on Ophthalmology, Section on Laryngology, Otology and Rhinology, and Section on Preventive and Industrial Medicine and Public Health. The first symposium on Health Problems in Education was held during the annual session of the American Medical Association at Atlantic City in 1937 and was attended by approximately seventy-five persons, mostly physicians. The second symposium was largely attended by teachers and school administrators, some 300 in all.

The speakers presented their own opinions. These do not represent the policies of the American Medical Association, except as they coincide with the policies of the Association expressed by the House of Delegates.

Abstracts of the papers presented follow. The discussions have been omitted. Complete papers, and copies of the discussions so far as they were submitted in writing by the speakers, will be furnished in mimeographed form, gratis, to physicians and educators on application to the Bureau of Health Education of the American Medical Association.

### LOOKING BACKWARD IN THE SCHOOL HEALTH FIELD

THOMAS D. WOOD, M.D.

Professor Emeritus of Health Education, Teachers College, Columbia University;

Chairman, Joint Committee on Health Problems in Education  
NEW YORK

Foundations have significant value for edifices built on them. School health work is of comparatively recent development. Greeks and Romans had ideals of sound mind in the sound body which have not been surpassed, perhaps not been equaled. The Middle Ages produced nothing significant for adequate recognition or care of health. School health work is a nineteenth century, Old World development beginning in France in 1833. Significant progress was made in Wales in 1848 in the school lighting and ventilation and the appointment of a medical attendance officer. Later contributions were made in 1866 in Breslau and in 1874 in Brussels, where the first system of med-

ical school inspection was established. School health work in America began in Boston in 1875 with records of height and weight. In 1877 dental service was established in Belgium; in 1822 the first school physician was appointed in Egypt. The first school nurse was appointed in England in 1887 and the first school physician in 1891. A regular system of medical inspection was established in Boston in 1894, and New York appointed 134 school physicians in 1897. Local boards of health controlled and administered the early school health work. Wiesbaden in 1896 organized a very comprehensive program of health work in the schools. School health work was promptly accepted by parents. Connecticut in 1899 passed the first state law requiring teachers to test eyesight every three years and since that time many states have passed laws relating to school health services and health education, but many such laws have ended in futility because the funds were not provided for very effective administration. Commercial organizations have attempted to utilize school systems for commercial purposes, but some worthy contributions to school health education have been made, especially by life insurance companies. Special contributions from voluntary sources include those by the American Child Health Association, the White House Conference on Child Health and Protection and the Joint Committee on Health Problems in Education.

### RELATIONSHIPS OF HEALTH SERVICE IN THE SCHOOLS TO HEALTH EDUCATION AND THE GENERAL CURRICULUM

EDNA W. BAILEY, PH.D.

Associate Professor of Education, University of California  
BERKELEY, CALIF.

One of the impressive facts about the practice of medicine is the indisputable authority of the physician in relation to his patients. Wherever the physician sits, there is the head of the table, no matter if the table be education and not medicine. Thoughtful and competent physicians do not feel themselves to be experts in all the fields. Able men and women in education do not count themselves authorities in medicine. There is an awakening to the significance of the relationships of health service to all other school activities. Health service is still the alien aristocrat, miracle working, incomprehensible, to be handled only with careful insulation against its powers. If health personnel should be admitted to a real share in educational enterprise, education might be exposed to shocks and changes of a most disquieting character. Recent studies by the Joint Committee brought forth emphasis, especially by parents and school executives, for the need of medical judgment with regard to health education, especially the choice of topics, validation

of information, and maintenance of sane balance. Relationship of health service to health education is to build up an appreciation of medical, dental and nursing care. Definite and specific instruction is the purpose of procedures in the school health service. School physical examinations may be provided for the purpose of getting everybody examined or as an educational demonstration involving a few volunteers. A usable vocabulary of health terms is necessary in general health education as well as in sex education, where its importance has been demonstrated. Health service must include the private physician as well as the public health worker. Close relationships between medicine and education are of far-reaching significance. In our schools, future citizens may be taught the dignity, worth and incalculable human usefulness of the art and science of medicine, by intelligent cooperation between the physician and the teacher. In the physician's office and at the bedside of his patient, the physician may learn wherein schools are doing right and beneficial things for children and wherein they are making sorry blunders.

## THE PHYSICIAN'S CONTRIBUTION TO EDUCATION

### The Educator's Point of View

GEORGE A. RICE  
Principal, University High School  
OAKLAND, CALIF.

There is no even, regular contact between the physician and most of the people. Few school children can name a family physician. For many years educators have been saying that health is one of the goals of education, but they have done little about it. I know of no adequate health program in a public school today. Physicians need to know more about schools. Many services can be given by schools to students with health handicaps. One such is a convalescent room with beds, lounging chairs and other conveniences, with a teacher in charge; such a room is to be found at University High School, Oakland. Many physicians make use of this to get children back to school, but not on the regular program, more quickly. The most important factor in the health service is the interest teachers have taken in health. Teachers can be taught to find the most obvious health handicaps, but how to work out the machinery for the care of handicapped children is another matter. In University High School, students are referred to the convalescent room from the following sources: attendance office, classroom teachers, students themselves who fear they have weak hearts or tuberculosis, school physician follow-up, parents direct, candidates for health certificates for extracurricular activities, such as athletics, and from school officials who wish to protect the school against liability for injury to students engaged in activities connected with the school. Out of the health service program has grown a surprising list of adjustments that may be made in the school load: short days, light academic programs, lightened extracurricular programs, modified physical education programs, modified school routines, modified classroom procedures, lightened assignments of work, financial assistance, delayed graduation. About 30 per cent of the boys and 45 per cent of the girls are referred to the convalescent room. A report by letter is made to physicians of the activities of the school, curricular and extracurricular, and the physician's advice as to modifications for his patient is asked. Physicians are using these opportunities frequently and helpfully. Physicians give more information than they formerly did to the school, stating not only a wish that a student be excused from physical education but giving information on which to base a modified program; this does not mean disclosing any information which should be privileged. Cooperation between the school and the private physician has been promoted by establishing and maintaining ethical relationships. The school never makes a contact with the physician without the consent of the parent. No child is ever programmed for an activity which a physician has said might be harmful. The school never recommends a specific physician. Physicians and schools are both concerned with the health of children. Has not the time come for a more cooperative attack on the problem?

## THE PHYSICIAN'S CONTRIBUTION TO EDUCATION

### The School Physician's Point of View

ARTHUR E. WADE, M.D.  
Director of Health, Seattle Public Schools  
SEATTLE

Children become adults. Never before has youth needed such rigid preparation for life. Educators are concentrating all their abilities and mobilizing all their forces in an effort to meet this exigency. Vocational schools, special schools for the physically handicapped and guidance departments are being instituted and the recognition that health is prerequisite to learning has become accepted. The medical profession has been asked for contributions to this work and is responding. Full-time health departments exist in the public schools of larger cities and part-time medical services in the schools of smaller cities. School physicians have been in the schools for forty years. The full value of their contributions and their degree of success depends on interest and cooperation by the medical fraternity. Special schools exist for sight saving, hard of hearing, open air, crippled children, opportunity, slow moving, and home teacher. Social and educational misfits call for individual guidance and counsel. The objective is that status which results from a healthy body, a clear thinking mind and a fund of knowledge concerning one's environment which may be used for personal comfort and social, business or spiritual success. In medicine, as in education, the whole individual is considered and the ultimate goal in both is successful living. Education and medicine have developed independently but have come together in final conclusion. Without controversy these two professions should now unite in complete understanding and with loyalty to a common cause. During the forty years in which doctors have assisted the schools their contributions have developed from sanitation and contagion to include physical defects and their follow-up toward correction, and now it is recognized that physical strains, especially those of physical education, might cause injury to some children. A new type of physical examination is designed for the appraisal of physical capacity. The health of children is in the hands of physicians. The school physicians and the school nurses, as a transfer of qualified physicians and nurses from private practice to school medicine, are a contribution from the medical fraternity. They are representative of the medical profession and to them is given a tremendous field of privilege. School medicine is becoming a specialty for which young men will soon train; graduate courses are now appearing in a few medical schools. It is of vital importance to the medical profession that qualified personnel carry to youth in the schools a modern and authoritative health program. Physicians in every community should answer the educators' invitation by exhibiting personal interest in the schools. School health departments need no longer operate under the personal opinions of individual health directors or under the prejudices and customs of local communities. Studies have been made by the White House Conference on Child Welfare, the American Academy of Pediatricians, the American School Health Association and other groups. School medicine is rapidly taking a position of supreme importance as the only agency through which state health laws, public health and private physicians can communicate with the schools regarding the physical welfare of school children. School medicine is the physicians' contribution within the schools. The private physicians' professional services and advice relative to health and mental capacities of the pupils are their contributions outside the schools. The work should be divided into two fundamental divisions:

#### (a) What shall be performed within the schools:

1. All services which render the schools safe places for children.
2. Assistance in the control of infectious diseases.
3. Periodic health examinations of pupils.
4. Administration of first aid.
5. Preathletic or physical education examinations.
6. Supervision of subject matter in health sources.
7. Counseling with all health groups akin to the schools.
8. Conveyance of medical information to the schools.
9. Consultations relative to alteration of individual school programs.

(b) What shall be performed outside the schools:

1. All complete diagnoses, with view of treatment.
2. All treatment, except first aid.
3. All family and personal physician consultations.

The inference in this division of services is that the physician's contribution to health education is best delivered when a division is harmoniously agreed on whereby the private physicians conduct outside the schools all treatment except first aid and the schools conduct all services in making the schools safe places, in establishing healthful living, and in assuming the responsibility for health education of children. The educators have requested the physicians to unite with them in the preparation of youth for life. The physicians are responding. Their contribution is formulated. It only awaits final agreement on methods of administration before it becomes unleashed to fulfil its mission in placing the powers of physiologic youth at maximum receptivity and development.

## THE PHYSICIAN'S CONTRIBUTION TO EDUCATION

### The Practicing Physician's Point of View

BURT R. SHURLY, M.D.  
DETROIT

Since the Civil War an expansion of educational opportunities has been witnessed for each generation. It was formerly unusual to find a college graduate. Now college has become the ordinary expectation of a vast number of boys and girls. The medical profession was for many years in advance of the average sphere in education of the rank and file of our people. The old family doctor had great influence with his clientele in the determination of the choice of a vocational career. He was a preceptor, guide, counselor, friend and beloved companion of the young people. He had their confidence and respect. His influence extended to the church, to public officials, to school teachers, and to public health when no health officer existed. With the inroads of specialism, the old influence waned and has been succeeded by the newer psychology, where the specialist knows what he knows and may know little else as it applies to the progressive requirements of education and to the broad cultural fields of modern life. Where we find a practicing physician serving on the school board, we find a valuable asset to the educational field. The physician can fit into the picture and produce an enormous amount of good in counseling and outlining the daily physical care of the school child. His function as an observer of life with broad common sense and scientific knowledge can have widespread applications. Schools are responsible for the child only during school hours, but these comprise a considerable portion of the day. Ethical problems, such as relation of the family doctor to the school authorities, include the consideration of the practicing physicians and the parents.

The Detroit school system maintains a special card index for each of the 286,000 pupils in its public schools. This blank card is sent annually to every parent, asking for the name, address and telephone number of the family physician; between 70 and 90 per cent have complied. Two members of the school board are physicians and surgeons, one member is the father of a physician and another is the son and brother of a physician. School doctors and nurses are appointed by the department of health, but a splendid working agreement exists without friction. The practicing physician whose name is on the pupil's card must not have his family taken away from him by any interference or advice given without consultation with him. He is entitled to participation in all discussions regarding the child's health. It is of paramount importance that contagious or infectious diseases be recognized in their earliest stages. Teachers cannot be diagnosticians, but they can note pupils' symptoms, such as fever, sore throat, nausea or vomiting, rapid pulse, chills, bad breath, lassitude, malaise or other symptoms. The child is sent home, to be seen by the family physician, who in many instances has already vaccinated the child against smallpox and used other preventive measures which have been found of value. By cooperating with the

family doctor, he is made a sympathetic adviser. The medical profession, like the great human family in general, has its percentage of cranks, extremists, men without scientific ideas and those who have allowed notions to encroach on their qualities of good sense and medical balance; these become special problems in diplomacy, and herein lies the value of a complete understanding between the practicing physician and the school authorities. When and where such an understanding exists, the practicing physician is making a great contribution to education. One of his major contributions is the encouragement of periodic health examinations for all pupils in the schools. He can further throw his support behind programs designed to improve the diet of school children and to further the employment of tuberculin testing, x-rays, and other methods for the early detection of disease. Education is constantly being challenged by those who wish to reduce taxes, regardless of the cost in human welfare and human happiness. Widespread education is an absolute necessity if democratic society is to persist. Much can be contributed to education by mutual understanding between the practicing physician and the principals and teachers.

## BETTER VISION FOR SCHOOL CHILDREN

C. S. O'BRIEN, M.D.  
IOWA CITY

Care of the eyes with conservation of vision is an important health problem in college students. During this educational period though, many young people discover that all is not well with the visual organs; poor vision and other signs of eye strain often appear for the first time. In a recent report by the Eye Health Committee of the Student Health Association, it is stated that of 1,250,000 college students in the United States an estimated 15 to 25 per cent enter college with more or less serious ocular defects and many more develop during the college courses. In most schools there are no particular visual requirements. Even when a physical examination is made the examination of the eyes is quite cursory, discovering only gross defects; for example, myopia, high degrees of astigmatism, congenital anomalies and advanced diseases of the eyes. Hyperopia, moderate astigmatism, muscle imbalances, disorders of accommodation or convergence and other defects which affect sustained close work were not detected. In many colleges and universities little attention is given to the lighting of dormitories, fraternity houses, sorority houses, libraries, classrooms and laboratories. No attention is ordinarily paid to the instruction of students in conservation of vision with special relation to eyestrain, adequate lighting and proper posture. Admittedly utopian is the idea of a complete examination of the eyes, with refraction under a cycloplegic for all entering students and at the beginning of each successive school year. In addition, the pupils should be educated as to proper lighting, posture, symptoms of common eye defects, muscle imbalances and general care of the eyes. A beginning, no matter how small or apparently insignificant, should be made toward such a goal. It might be made by the universal adoption of a standard visual test for all entering students and its repetition each year. If all schools adopted the same type of Snellen chart, a common distance, and standardization of the illumination at from 7 to 10 foot candles, data would soon accumulate which would be of value in statistical studies and in the determination of further steps in ocular conservation. Such testing could be done by a physician or by a trained technician. It could be carried out by almost any school. The next step is one which many schools could easily take but which many more would find difficult; that is, an external ophthalmoscopic examination of the eyes, which must be made by a physician who has had ophthalmic training. The desired end is a complete examination of the eyes, including refraction under an adequate cycloplegic by a trained ophthalmologist. At present only a few schools could do such a thing, namely those with a college of medicine, with a strong department of student health or with adequate funds to employ trained ophthalmologists. An alternative is a requirement that each student present as a part of admission creden-

From the Department of Ophthalmology, State University of Iowa College of Medicine.

tials a certificate of recent date from a competent ophthalmologist setting forth the condition of the eyes. For those who could not otherwise afford it, the examination could be made by a physician employed by the school. Accurate records should be kept of all tests. If lighting is inadequate, measures should be taken to rectify such defects in libraries, classrooms and laboratories as well as dormitories, fraternity and sorority houses and rooming houses in general. Two or three easily understandable lectures might be given to entering students on simple ocular hygiene and the requirements for adequate lighting; thus students could be made to understand the symptoms arising from defective eyes and the importance of conservation of vision and reasonable care of the visual organs.

### HOW SHALL SEX BE TAUGHT IN THE SCHOOLS?

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It is expected that the schools shall help the home to prepare the child for the problems of life. The most difficult and important problems in life are those which have to do with sex. A large percentage of marriages are unhappy and many of them end in separation and divorce; many young people do not know how to go safely about the important project of choosing a marriage mate; sexual perversion is apparently on the increase; illegitimacy and criminal abortion are all too common. It would be better for one to fail in everything else and to succeed in his home life than to succeed in everything else and fail in his home life.

Sex must be taught as a pure, fresh, wholesome and perfectly legitimate phase of life. We are not required to apologize for it. There is but one place where sex is best taught; that place is the home. Mothers and fathers who do not accept their obvious duty in this respect are guilty of very serious neglect. The instruction of the child should begin long before he or she starts school by answering truthfully, all questions and by correct habit formation and the building of good mental and moral patterns as a by-product of wholesome home life. Many homes will not as yet accept that responsibility.

Perhaps the church should step in, but many who need such instruction have no church connection and in many churches instruction is merely to "behave oneself." Y. M. C. A.'s, Y. W. C. A.'s and other youth groups reach too few persons and at too late an age. The schools then must undertake this function but will probably never do it really well because it gets the children too late; it must teach children of the widest variety of cultural, ethical, economic, moral and religious backgrounds; it will run at cross purposes to the teaching of the parents and spiritual advisers; a very large proportion of the teachers are unmarried persons whose understanding of sexual problems is either academic or illicit; there are two sexes to be taught and two sexes to do the teaching. Schools should teach sex only because it is absolutely necessary and because no other agency seems to be doing it.

Sex education should be integrated throughout the entire school course and on the basis of home life as a unit which will allow sex to be taught through arithmetic (home budgets), geography, history, nature study, science, physical education, agriculture, gardening, economics and hygiene. It must be suited to the age of the child and as far as possible individually, and great care must be taken not to whet the appetite. Students should not be unnecessarily and conspicuously separated on the basis of sex for the purpose of giving sex instruction. Sex instruction must never be morbid with relation either to pain and danger of childbirth or to danger of disease. Mere anatomy and development of the reproductive organs is not sex education at all. The emotional side of the subject must not be neglected. The individual who regards sex from the proper emotional angle can almost always be trusted. Sex education cannot answer every question but must show the child the way to learn the truth about so important a matter. Adult education in matters pertaining to sex is important and can be handled through mothers' groups, parent-teacher associations, night classes, extension courses and the

like. The school must seek only to supplement the home. It must avoid taking this subject away from the parents but rather it must merely bridge the present gap until the home is able to take up its normal and logical responsibility.

### QUALIFICATIONS FOR TEACHING HEALTH

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The health of the individual as a whole is a combination of essential somatic, mental and social qualities of living. By somatic health I mean body health including normal growth, development, competence and comfort. By mental health I mean the service of a normal, adjusted, orderly, satisfied, happy, joyous, vigorous mind. Health is taught for two main purposes; to present information to the individual and for the formation and practice of wholesome healthy habits with particular reference to the age involved, the health of his family and the health of his community. Some of the critically important periods in the life of the individual where he should be taught health with a special emphasis include (1) when marriage is contemplated, (2) when parenthood is expected, (3) in early infancy, (4) in the preschool period, (5) during the elementary school period, (6) in the secondary school, (7) in college, (8) in professional school, (9) when the individual is not in the home or in school and (10) during adult life.

Those who teach health nowadays include: (a) friends, neighbors, the gang, the prospective mate, (b) the man in the street, (c) the movies, theater, radio, books, articles, newspapers, magazines, advertising matter, (d) the family, (e) cultists, faddists, quacks, (f) clergymen, (g) family doctors, (h) self-appointed advisers, (i) school instructors, (j) drug store clerks and others. In the various periods of life different influences come to bear, but at some time or other practically all of those mentioned influence the health conduct of the individual.

The qualifications for teaching health include a sound understanding of human biology, a knowledge of human anatomy and physiology, a knowledge of normal psychology and of social psychology, a knowledge of the agents that injure health and of defenses against them, a knowledge of the principles and practices of hygiene, a superior medical education or access to consultation with such a person and a knowledge of the technic of teaching.

Effective health teaching can arrive only when all our instructional influences integrate into a coordinate total health program, through the practice of individual hygiene, group hygiene and society hygiene. A knowledge of health does not produce health. Qualifications for teaching health are of the greatest importance for the teacher and for the individual being taught, but health comes not only from being taught and from the wisdom of understanding but from the favor of heritage and from the favor of environment and from the practice of behaviors that are favorable to health.

### AUDIOMETERS AND THEIR PLACE IN THE SCHOOL PROGRAM

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LOS ANGELES  
AND  
VERN O. KNUDSEN, PH.D.  
LOS ANGELES

With money, and not an excessive amount, it would be a simple matter to have trained workers test the hearing of all school children, make a more careful examination of those who show a hearing defect and refer those who need treatment to their own physicians. If this were done hundreds of thousands of children would be saved from the handicap of becoming hard of hearing in later life. The universal experience of otolaryngologists has been that patients come to them too late. There is no approach to the prevention of deafness to compare with the systematic and universal exami-

nation of the hearing of school children. Last year in the state of California more than two million dollars was spent for the blind, one third furnished by the federal government, one third by the state of California and one third by the counties. Whether the money should come from this or other sources, the medical profession should bestir itself in this service but should make every effort to keep it free from unworthy political influence. Tests with the 4A audiometer by themselves do not meet the need but must be followed by individual audiometric tests and suitable treatment. Nine thousand students have been tested with audiometers annually in the Los Angeles public schools; there are two hundred thousand pupils

in the first eight grades. With a larger staff it would be possible to test twenty-five thousand pupils annually with one 4A audiometer. About half of the children are found to have an impairment of hearing of such a degree that they will require a careful routine ear, nose and throat examination. This would require two otolaryngologists, two nurses, two clinical audiometers, one 4A audiometer, two full time technicians and one full time clerk. Individual tests, to be accurate, must be conducted in a very quiet room or soundproof booth. After the audiometric and ear, nose and throat examination, notices should be sent to the parents recommending that they consult the ear, nose and throat specialist of their choice.

## GRADUATE MEDICAL EDUCATION: TENNESSEE

A PROGRESS REPORT OF THE FIELD STUDY ON GRADUATE MEDICAL EDUCATION IN THE UNITED STATES  
BEING CONDUCTED BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

The Tennessee State Medical Association in 1936 formed a committee on medical education to study the educational needs of practicing physicians in the state. It was recommended by this committee that a postgraduate extension course in obstetrics be established, and the state association appropriated \$1,500 toward financing such instruction. Vanderbilt University, the University of Tennessee and the Tennessee Department of Public Health made similar or smaller contributions, the Commonwealth Fund of New York contributing a larger amount. A standing committee on postgraduate instruction in obstetrics was formed with four physicians from the association and one from each of the three contributing agencies in the state, with Dr. James R. Reinberger as chairman. An organization was created to provide for instruction with three full time employees, office space being donated by the University of Tennessee at Memphis. A trained and experienced field clinician, a field organizer and an office secretary inaugurated the proposed postgraduate course.

Instruction proceeded on the circuit plan, the state being divided into nine geographic divisions, excluding certain metropolitan sections until the rural areas had been covered. About ten counties constitute a circuit, and a two hour period of instruction is given weekly for ten times in each of the circuit's five or six teaching centers. An hour of lecture is followed by projection of movies or lantern slides and informal discussion and finally an examination of patients brought in by the local clinic chairman. Where clinical material is not available, manikins are used. Patients are seen in consultation without fee, this being considered a service of the state association. Lectures to the public are included, and in the first circuit seven lay groups were addressed by the field clinician, usually on antepartum care. Talks are given on request at regular meetings of county societies on subjects not included in the course.

A registration fee of \$5 was charged each physician. By March 1, 1938, 896 physicians of the 2,939 in the state had registered. There are 1,731 members of the state association. The average attendance has been approximately 87 per cent for the ten clinic periods. Certificates of attendance are being prepared for physicians who have attended seven or more of these meetings. An abstract of the lectures has been prepared by the field clinician and published by the committee to be supplied at the end of the course to all who have enrolled. More than half of the registrants have requested the postgraduate committee to furnish cards for making antepartum records. The first year's budget for the entire educational program was \$16,500. The course was publicized by the field organizer, who visited in person rural physicians in the area where the course was to be organized. These visits were followed by letters and cards announcing the course, and notices appeared in the state association's journal and in local newspapers.

Answers to a questionnaire submitted to physicians participating in postgraduate instruction indicate that courses are desired similar to the one being conducted this year in obstetrics. Pediatrics, internal medicine, surgical diagnosis, traumatic and orthopedic surgery and anatomy were the subjects most frequently requested by 275 of the 750 physicians ques-

tioned. It is hoped that physicians and agencies within the state may finance such instruction and provide for a permanent educational organization. Postgraduate teaching, as now being conducted, is believed to be an excellent means of reorganizing and reactivating dormant county societies for the primary purpose of elevating the standards of practice of rural physicians. At the same time the public is being educated to appreciate the advantages of proper medical care.

The Commonwealth Fund each year since 1930 has provided fellowships for twenty physicians of Tennessee seeking further training in medical centers. This year eight of the twenty registrants at Vanderbilt University School of Medicine will come from Oklahoma. Each applicant is interviewed personally and when accepted is given a stipend and traveling expenses. His tuition of \$150 and a small breakage fee are paid also. Four months of intramural instruction is given during the summer and is essentially the four year undergraduate course in miniature. Dr. John P. Youmans, director of postgraduate instruction, has divided the course into five periods. The first four weeks is devoted to clinical diagnosis and clinical laboratory methods and consists of essential practical work with patients, who are demonstrated in the outpatient clinics and hospital wards. Basic clinical sciences are reviewed also as they apply to the general practice of medicine. Four subsequent periods are devoted to a consideration of the broader aspects of medicine, surgery, pediatrics and obstetrics. There are from three to six members of the faculty teaching physicians in each division of medicine. Actual examination of patients, performance of laboratory procedures, ward rounds, conferences and informal lectures constitute the methods of instruction. Work in the specialties, including gynecology and preventive medicine and attendance at necropsies and clinical pathologic conferences, is afforded. Free use of the library is permitted. The emphasis is on learning by performance under close supervision. An appreciation by clinical instructors of the problems and limitations of general practice seems essential for the success of such an effort. Approximately 100 physicians have had the benefits of this training, although twice this number have applied.

The School of Medicine at Vanderbilt University also offers a three months postgraduate course in public health, for which the tuition is \$100. This course is designed primarily for health officers. Seventeen men from seven states are now registered. Physicians desiring special training in syphilology may join the staff of the University Clinic for varying periods, depending on the individual needs for training. Intensive intramural courses in other special subjects are offered during the summer. Daily practical and clinical instruction over two to three weeks is available in pediatrics, gynecology, obstetrics, x-ray, allergy, cardiovascular-renal diseases, diseases of the blood, metabolic and endocrine diseases and other special courses in the various divisions of medicine. Tuition fees from \$25 to \$100 are charged, the yearly registration averaging not more than five physicians.

The library at the School of Medicine at Vanderbilt University has a record of the number of loans made by physicians



in Tennessee over the past seven years. There were 145 journals or books lent to sixty-five individuals during this period.

The Department of Medicine of Meharry Medical College is offering a two weeks intensive review course this year in which the enrolment will be limited to from fifteen to twenty colored physicians. Subjects selected include physical diagnosis, clinical laboratory methods, syphilis, tuberculosis, cardiovascular-renal disease, gastro-enterology, urology, infectious diseases, cancer, pediatrics and obstetrics-gynecology. Ward rounds, attendance at clinics and clinical pathologic conferences and symposiums are to be stressed. A tuition fee of \$10 is to be charged.

The University of Tennessee College of Medicine offers graduate instruction in the department of orthopedic surgery leading to the degree of master of science in this subject. Five physicians have qualified for the course and are now engaged in a three year period of advanced study. Successful performance in preliminary and final oral, written and practical examinations and the preparation of an acceptable thesis are required. Similar courses in five other divisions of medicine are contemplated.

Of the several sectional medical societies in Tennessee, the Mid-South Postgraduate Medical Assembly is the oldest and best known. It was founded in 1883 as the Tri-State Medical Association and was reorganized in 1931 under its present name. It is the purpose of this group to provide instruction for physicians in the general vicinity of Memphis, where the four day meetings are always held. The present secretary-treasurer, Dr. A. F. Cooper, has organized and managed the assemblies during the sixteen year period he has held this office. This year's assembly was addressed exclusively by twenty-three out of state speakers. Many of the lectures were illustrated. There were round table discussions, symposiums and scientific exhibits. A \$5 registration fee is charged each registrant. This constitutes the dues, which, with the income from commercial exhibits, finance the activities of the assembly. The clinical reports are submitted to the *Mississippi Doctor* for publication. There were 1,252 who registered for the last assembly, 661 being physicians, 233 of whom were from Memphis, 115 from other parts of Tennessee and 131 from Mississippi, ninety-eight from Arkansas, sixteen from Alabama, fourteen from Missouri and ten or less from such states as Kentucky, Texas, Louisiana, Oklahoma, Kansas and Illinois. There were approximately 400 medical students and a number of nurses who attended. Each year there is an increased interest in this postgraduate assembly. Any physician in good standing in a state medical society may attend.

The Tennessee Valley Post Graduate Medical Assembly is organized exclusively for postgraduate study. The three day course of lectures by guest speakers provides physicians in the vicinity of Knoxville with a series of lectures and discussions on recent advances in medicine. Fifteen out of state speakers contributed to last year's program. Dr. Jesse C. Hill has been secretary of the assembly since it was founded four years ago. A \$4 registration fee is charged any physician affiliated with a state medical society who attends. Commercial exhibits aid in the financing. The attendance at these assemblies has averaged about 350, the physicians coming from Tennessee, Kentucky, Virginia, West Virginia, North Carolina and Georgia.

The Nashville Postgraduate Medical Association, of which Dr. Jefferson C. Pennington is secretary, was formed in 1934 to provide practicing physicians with an opportunity to examine, diagnose and treat patients in the wards and clinics of the Nashville General Hospital. The membership of the association has increased from fourteen to twenty-one, each member subscribing \$10. A two weeks period of lectures, demonstrations, medical, surgical, pediatric, obstetric, gynecologic and other specialty clinics and ward rounds are held each year. The attendance has varied from fifteen to thirty under the supervision of approximately sixty-five teachers, including members of the association. The attending physicians are divided into three groups to allow greater opportunity for learning and to provide more personal instruction, which is spread over a twelve hour period daily five days each week. Physicians who desire to see obstetric or other emergency cases at night may do so, and deliveries may be conducted under supervision. Physicians are circularized in middle Tennessee, southern Kentucky and northern Alabama, each registrant paying a fee of \$10.

The Middle Tennessee Medical Association, of which Dr. Daugh W. Smith is secretary-treasurer, was formed in 1887 to provide physicians in thirty-five counties of middle Tennessee with some annual postgraduate programs. Approximately 125 physicians attend yearly, each paying a \$3 registration fee. The last meeting, which was held in Dickson, was devoted to two days of lectures and discussions given by Tennessee physicians on thirteen subjects.

Three other district medical organizations give one or two day semi-annual or annual programs of lectures and discussions. These are the East Tennessee Medical Association, the West Tennessee Medical Association and the Upper Cumberland Medical Association. Guest speakers are invited. Registration fees are \$2, and the yearly attendance in each section is from 150 to 250 physicians.

The annual meeting of the Tennessee State Medical Association is devoted in part to graduate instruction. The approximate attendance each year is 700.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

### ARIZONA

**Personal.**—Dr. William M. Bevis, clinical director of Soldiers Home Hospital, Mountain Home, Tenn., has been appointed to a similar position at the Veterans' Administration Facility, Whipple.

### ARKANSAS

**District Meetings.**—The Ninth Councilor District Medical Society was addressed in Harrison June 7 by Drs. Seldon W. Chambers, Harrison, on "Activities of the Full Time County Health Officer and His Relations with the Family Physician"; Davis W. Goldstein, Fort Smith, "Control of Syphilis"; Ross E. Fowler, Harrison, "Preoperative Treatment of Prostatic Obstruction," and Henry V. Kirby, Harrison, tularemia. At a meeting of the Fifth Councilor District Medical Society in Magnolia June 14 the speakers were Drs. George H. Robinson, Shreveport, "Conservative Treatment of the Ruptured Appendix"; Ralph Bowen, Oklahoma City, allergy, and Henry King Wade, Hot Springs National Park, diseases of the testicles.

### CALIFORNIA

**Changes in Health Officers.**—Dr. Paul W. Schriber has been appointed health officer of Atwater, succeeding Dr. Clarence C. Fitzgibbon, Merced. Dr. Fitzgibbon is health officer of Merced County. Dr. Burton L. Zinnamon, San Francisco, has been appointed health officer of Sonoma County, effective July 1; the unit was recently placed on a full time basis. Dr. Frank E. Sohler Jr. has succeeded Dr. Donovan C. Oakleaf as health officer of Cloverdale. Dr. Francis J. Peter has been appointed health officer of Turlock, succeeding Dr. Charles E. Pearson.

**Society News.**—Dr. Leo Eloesser, recently returned after spending nine months with the government forces in Spain, will address a special meeting of the San Francisco County Medical Society August 23 on "War Surgery in Spain." Dr. Philip E. C. Manson-Bahr, London, England, will address a general meeting of the society August 30 on "Differential Diagnosis of Fever from a Practical Point of View." Dr. Harry Clare Shepardson, San Francisco, discussed "Clinical Experiences with Long-Acting Insulins" before the Hollywood Academy of Medicine July 14.

### FLORIDA

**Personal.**—Dr. Lauren McCall Sompayrac, Jacksonville, was awarded the Robert L. Schirmer cup July 12 by the Junior Chamber of Commerce, in recognition of his "meritorious leadership" during the past six months. Dr. Sompayrac has been chairman of the health and sanitation committee, which is actively engaged in a campaign against venereal diseases; he is also president of the Duval County Social Hygiene Council.

**Society News.**—Dr. Julian Deryl Hart, Durham, N. C., discussed the use of ultraviolet rays in sterilizing the operating room before the Hillsborough County Medical Society June 7.

—Officers of the Florida Radiological Society elected at its recent annual meeting are Drs. Harold O. Brown, Tampa, president; Harry B. McEuen, Jacksonville, vice president, and Joseph H. Lucinian, Miami, secretary.—Dr. Arthur J. Bieker discussed "Cardiology in Aviation" before the Pinellas County Medical Society in St. Petersburg July 1.

**District Meeting.**—The Northeast Medical District Society will hold its second annual meeting in Ponte Vedra September 15 at the Old Club, under the presidency of Dr. Wilfred McL. Shaw, Jacksonville. Dr. James Lunsford Boone, Jacksonville, president, Duval County Medical Society, will give the address of welcome. In addition to speeches by some of the officers of the state medical society, addresses will be delivered by the following:

- Dr. Charles E. Tribble, DeLand, Dystocia Due to Sacral Teratoma.
- Dr. Allen P. Gurganious, Palatka, Common Sense Medicine.
- Dr. Evan B. Wood, Daytona, Coronary Occlusion.
- Dr. Vernon A. Lockwood, St. Augustine, Industrial Disability—Its Evaluation and Prevention.

## GEORGIA

**New Director of Cancer Division.**—Dr. Ralph Mosteller, pathologist and director of the laboratory, Spartanburg General Hospital, Spartanburg, S. C., has been appointed director of the division of cancer control of the state department of health, Atlanta, it is reported. He succeeds Mr. J. W. Scherschewsky. Dr. Mosteller graduated at the University of Georgia School of Medicine, Augusta, in 1931.

## IDAHO

**State Medical Meeting at Sun Valley.**—The Idaho State Medical Association will hold its annual meeting at the Challenger Inn, Sun Valley, September 6-10, under the presidency of Dr. Arthur C. Jones, Boise. The program is a graduate course of lectures in the morning and afternoon and round table conferences at luncheon. Members of the faculty of the University of Michigan Medical School, Ann Arbor, will be the lecturers this year:

- Howard B. Lewis, Ph.D., Use and Abuse of the Methods of Blood Chemistry.
- Dr. Cyrus C. Sturgis, Recent Advances in the Treatment of Blood Diseases.
- Dr. Frederick A. Collier, Fluid and Electrolyte Balance in the Sick Patient.
- Dr. Norman F. Miller, Obstetric Forceps—Their Use and Misuse.
- Dr. Albert C. Furstenberg, The Clinical and Pathologic Study of Tumors and Cysts of the Head and Neck.

The speakers will deliver other lectures during the five day session.

## ILLINOIS

**Society News.**—Dr. Lewis C. Scheffey, Philadelphia, addressed a meeting and conducted a clinic at the Sloan Clinic, Bloomington, June 22-23; his subject was "Changing Concepts in the Management of Cancer of the Body of the Uterus."—Dr. Joseph J. Link, Mattoon, discussed preoperative and post-operative care at a meeting of the Coles-Cumberland County Medical Society in Charleston July 13.—Dr. Carlo S. Scuderi, Chicago, addressed the Marion County Medical Society July 28 on "Modern Concept of Fractures of the Neck of the Femur."

## Chicago

**Dr. De Lee Honored.**—The main building of the Chicago Lying-In Hospital group on the Midway will in the future be known as the Joseph B. De Lee Hospital in honor of its founder, in accordance with a recent change in contract merging the hospital with the University of Chicago. Since the merger with the university, the name of the hospital has become "The Chicago Lying-In Hospital of the University of Chicago." In addition to the main section of the building, named in honor of Dr. De Lee, there is the "Mothers' Aid Pavilion" for isolation cases and the "Max Epstein Clinic," the outpatient division. The university agreed in the contract to continue the operation of the Stock Yards Dispensary, 734 West Forty-Seventh Street, which was operated by the hospital, for five years and thereafter as long as it may be useful. The service to women is also to be continued. Property heretofore used for the work of the Chicago Maternity Center has been given to that organization by the hospital. Dr. De Lee founded the Chicago Lying-In Hospital in a tenement house in Maxwell Street in 1895. He is professor emeritus of obstetrics and gynecology at the university.

**Annual Occupational Disease Symposium.**—The department of industrial medicine of Northwestern University Medical School will conduct its second annual symposium on occu-

pational disease at Thorne Hall on the Chicago campus September 26-27. The speakers will include:

- Dr. Carl M. Peterson, Secretary, Council on Industrial Health, American Medical Association, Industrial Disease Education.
- Philip Drinker, Ch.E., professor of industrial hygiene, Harvard School of Public Health, Boston, The Scope of the Occupational Disease Research Problem.
- Dr. Lewis J. Pollock, professor of nervous and mental diseases at Northwestern, Traumatic Neurosis.
- Mr. Arthur H. Young, industrial relations counselor, The Place of Medical Service in Industrial Relations.
- Dr. John G. Cunningham, Toronto, Canada, Industrial Plant Surveys.
- Dr. Stanley J. Seeger, Milwaukee, chairman, Council on Industrial Health, American Medical Association, Industrial Health and Safety and the Practicing Physician.
- Dr. Edgar V. Allen, Rochester, Minn.
- Dr. James G. Carr, secretary and professor of medicine at Northwestern.

Dr. Irving S. Cutter, dean of the medical school, will be toastmaster at the banquet at the Blackstone Hotel in the evening and Mr. O. E. Mount, American Steel Foundries, will speak on "Industrial Health—The Responsibility of Labor, Management and the Community."

## INDIANA

**Personal.**—Dr. Fletcher C. Stewart, Fort Stanton, N. M., has been appointed medical officer in charge of the U. S. Marine Hospital, Evansville.—Dr. Wallace E. Childs, Madison, was appointed, July 1, director of district health unit number one, consisting of Gibson, Pike, Posey and Warrick counties.

## LOUISIANA

**Society News.**—At the joint scientific and executive meeting of the Orleans Parish Medical Society, New Orleans, July 11 the speakers were Drs. Narcisse F. Thiberge on "Study of the Thrombocyte in Allergy" and Merrill C. Beck, "Cyclopropane—Advantages and Disadvantages."—A recent meeting of the Morehouse Parish Medical Society was addressed in Bastrop by Dr. Charles J. Raney, Bastrop, on undulant fever.

**New Director of Venereal Disease Control.**—Dr. Ford S. Williams, director of the St. Mary Parish Health Department, Franklin, has been appointed state director of venereal disease control by the state board of health. Dr. Williams graduated at the Louisiana State University Medical Center, New Orleans, in 1934. He will be succeeded as director of the parish unit by Dr. Paul S. Parrino.

## MASSACHUSETTS

**Personal.**—Dr. Malcolm J. Farrell, Waltham, has been appointed assistant superintendent of the Walter E. Fernald State School, Waverley, succeeding Dr. Charles S. Woodall, who resigned to become superintendent of the Brandon State School, Brandon, Vt.

**State Medical Election.**—Dr. Channing Frothingham, Boston, was elected president of the Massachusetts Medical Society at its annual meeting in Boston June 1. Dr. Albert W. Stearns, Billerica, was chosen vice president and Dr. Alexander S. Begg, Boston, reelected secretary.

## MICHIGAN

**Outbreak of Dysentery—Six Deaths.**—The deaths of six children were reported in an outbreak of dysentery in Owosso, according to the Chicago Tribune August 7. Eight patients were ill in the hospital. Preliminary investigation revealed the disease to be Shiga dysentery, it was stated, and the state department of health had set up a laboratory in the town to study the outbreak.

**Changes in Health Officers.**—Dr. Ragnar T. Westman, Bay City, has resigned as director of the health department of Bay County. Dr. James A. Dolce, Charlotte, has been appointed assistant director and county health officer of Allegan County, it is reported. Dr. Morley B. Beckett, who recently resigned as county health officer, will continue as director of the Allegan and Van Buren county units, it was stated. Dr. Clifton C. E. Merritt, Iron Mountain, has resigned as health officer of Dickinson County to succeed Dr. Westman in Bay County.

## MINNESOTA

**Personal.**—Dr. Abel R. Ellingson, Detroit Lakes, has been elected coroner of Becker County.—A testimonial dinner was held in honor of Dr. and Mrs. Aaron E. Henslin, LeRoy, in recognition of the completion by the former of forty-three years in the practice of medicine.

**Commonwealth Fund Aids Graduate Teaching.**—The courses offered to practicing physicians during the past two years by the Post Graduate Medical Institute in connection with

the Center for Continuation Study, University of Minnesota, have proved so popular that the Commonwealth Fund of New York is subsidizing the further development of the program over the next five years. Dr. William A. O'Brien, associate professor of preventive medicine and public health at the medical school, has been relieved of other duties to become director of postgraduate medical education on a full time basis. The Center for Continuation Study was erected late in 1936 at a cost of \$300,000. It is used jointly by the professional schools of the University of Minnesota for intensive resident graduate instruction and contains living rooms for seventy-eight graduate students, dining hall, lounge, library, chapel, classrooms, administrative offices and parking garage. Any physician who is a member of his local medical society may attend the courses.

### MONTANA

**Plague Infection.**—Plague infection has been proved in pooled tissue from two ground squirrels, and in a pool of ninety-eight fleas from twenty-eight ground squirrels of the same species, all taken June 24 ten miles north of Wisdom on Plempton Creek, Beaverhead County.

### NEBRASKA

**Graduate Course in Omaha.**—The state department of health and the maternal and child health committee of the Nebraska State Medical Association sponsored a graduate course in obstetrics, gynecology and pediatrics July 11-23, given by members of the faculties of Creighton University and the University of Nebraska schools of medicine, Omaha. Clinics and demonstrations were held at St. Joseph's and University hospitals as well as at the universities.

### NEW YORK

**School Physicians' Meeting.**—Dr. Michael Levitan, Rome, was elected president of the New York State Association of School Physicians at the annual meeting in Saratoga Springs June 27; Dr. Louis A. Van Kleeck, Manhasset, vice president, and Dr. Clara Adele Brown, Oswego, secretary. Among the speakers at the meeting were Drs. Alfred W. Jacobsen, Buffalo, on "Endocrine Studies in School Children"; Ernest L. Stebbins, Albany, "Communicable Diseases and the School," and John E. Burke, Schenectady, "Attacking Mental Hygiene Problems in the School."

**Personal.**—Dr. Arnold Shamaskin has resigned as medical superintendent of the Montefiore Hospital Country Sanatorium, Bedford Hills, to become superintendent and medical director of the Jewish Consumptives Relief Society Sanatorium in Spivak, Colo., October 1. —Dr. Benjamin White Seaman, Hempstead, was the first person to receive an annual award established recently by the Nassau Daily Review-Star for the "most valuable service to the whole community by a local resident." The award, a medallion and citation, was presented at a dinner June 27, attended by 450 citizens of Nassau County. Arthur T. Vanderbilt, Newark, N. J., president of the American Bar Association, was the principal speaker. Dr. Seaman was honored for his activities in connection with the establishment of the Meadowbrook Hospital, Hempstead, completed in 1937.

### New York City

**Personal.**—Dr. Francis Peyton Rous of the Rockefeller Institute for Medical Research received the honorary degree of doctor of science from the University of Cambridge, England, June 10. Dr. James B. Murphy of the institute received the honorary degree of doctor of science from Oglethorpe University, Atlanta, recently. —Dr. J. Bentley Squier was decorated by Crown Prince Gustaf Adolf of Sweden during his recent stay in the United States; Dr. Squier was made a Commander of the Order of the North Star. —Dr. Anthony Bassler received the honorary degree of doctor of laws from Hahnemann Medical College of Philadelphia June 9.

**Society News.**—Dr. Nathaniel E. Selby addressed the Bronx County Medical Society June 15 on "Hypnotism—Its Scientific Basis and Medical Application." —The Society for the Aid of Crippled Children in Palestine has recently formed a medical unit in New York. Dr. Michael S. Burman is chairman; Dr. Samuel E. Sinberg, vice president, and Dr. H. Howard Green, secretary. Dr. Henry Keller is surgical director of the society. —The Medical Society of the County of Queens will be addressed September 27 by Drs. Foster Kennedy on "The Organic Background of Mind" and Elizabeth I. Adamson, "Mild Depressions Cared for by Family Doctor."

**Proposed City Food and Drug Bill.**—A bill requiring registration of proprietary foods and drugs has been introduced in the city council and will probably be brought up for action in September. The bill requires payment of an initial registration fee of \$25 for every proprietary product with subsequent annual fees of \$10. Manufacturers would have to provide a statement of formula, qualitative and quantitative, and a list of judgments or decrees against the product by courts or government agencies; drug manufacturers would have to state the therapeutic or cosmetic value of their products and standards would have to be adopted, according to *Advertising Age*. A protest has been lodged with Mayor La Guardia by the Toilet Goods Association.

### NORTH DAKOTA

**Personal.**—Dr. Elizabeth C. Smith, formerly of the division of maternal and child health of the Pennsylvania state department of health, has joined the staff of the division of child hygiene of the North Dakota State Department of Health.

**State Medical Election.**—Dr. Harry A. Brandes, Bismarck, was chosen president-elect of the North Dakota State Medical Association at the recent annual meeting in Bismarck. Dr. William H. Long, Fargo, will be the president for the coming year. Vice presidents elected were Drs. Cyril J. Glaspel, Grafton, and Frederick W. Fergusson, Kulm. Dr. William W. Wood, Jamestown, was elected secretary, and Fargo was chosen as the place for the 1939 meeting.

### OHIO

**University News.**—Two gifts totaling \$19,000 were given to the University of Cincinnati College of Medicine, Cincinnati, for research. One of \$14,000 was given by the John and Mary R. Markle Foundation, New York, for a two year period to aid Dr. Tom D. Spies, associate professor of medicine, in his work on pellagra. The Taylor Instrument Companies, Rochester, N. Y., contributed \$5,000 for further investigations in the field of vascular problems.

### PENNSYLVANIA

**Society News.**—Dr. Joseph H. Barach, Pittsburgh, addressed the Indiana County Medical Society, Indiana, June 9, on "Present Day Conceptions and Treatment of Diabetes." Dr. Barach addressed the Crawford County Medical Society, Titusville, June 22, on "Clinical Interpretation of Arterial Hypertension and Arterial Hypotension."

### SOUTH CAROLINA

**Personal.**—Mr. James L. Rogers, business manager of the Spartanburg General Hospital, Spartanburg, has been named superintendent of the hospital, effective July 15, following the resignation of Dr. James Moss Beeler to accept a similar position at the Grady Hospital, Atlanta, Ga. —Drs. Josiah S. Matthews, Denmark, and George R. Wilkinson, Greenville, were recently reappointed to the state board of medical examiners for terms of four years. —Dr. James L. Mims, Chester, has been appointed health officer for Jasper County, succeeding Dr. John B. Wallace, Fountain Inn, who returned to private practice. —Dr. Richard K. Brown of the staff of the Georgia State Tuberculosis Sanatorium, Alto, Ga., has been appointed superintendent of the Greenville County Tuberculosis Hospital, Greenville. —Dr. Thomas K. Fairley, Johnston, has been appointed health officer of Union County. —Dr. Richard M. Street, Laurens, recently resigned as health officer of Abbeville and Laurens counties.

**Society News.**—At a meeting of the Second District Medical Association at Aiken July 28 the speakers were Drs. Richard Torpin, Augusta, Ga., on "Ectopic Pregnancy, Diagnosis and Treatment"; Julian D. Hart, Durham, N. C., "Sterilization of Air in Operating Rooms," and Alfred F. Burnside, Columbia, "Varicosities of the Lower Extremities." Dr. Douglas Jennings, Bennettsville, president-elect of the South Carolina Medical Association, made an address. —The Lee County Medical Society was recently reorganized with the following officers: Drs. John B. Cousar, Bishopville, president; Robert O. McCutchen, Bishopville, vice president, and Donald E. Michie, Bishopville, secretary-treasurer. Speakers at the reorganization meeting were Drs. James R. Des Portes, Fort Mill, president of the South Carolina Medical Association; Edgar A. Hines, Seneca, secretary of the association, and Edward T. Kelley, Kingstree, councilor of the seventh district. —At a meeting of the Columbia Medical Society July 11 the speakers included Drs. Coyt Ham, Sol B. McLendon and Glenn B. Carrigan, Columbia, on treatment of dementia praecox with

insulin and metrazol.—Dr. Elija M. Hicks, Florence, read a "Review of the Pituitary and Ovarian Hormones" before the Florence County Medical Society recently.

### UTAH

**State Medical Meeting at Ogden.**—The forty-fourth annual meeting of the Utah State Medical Association will be held in the new High School Building, Ogden, September 1-3, under the presidency of Dr. Menzies J. Macfarlane, Cedar City. Included on the program will be the following:

Dr. Owen H. Wangenstein, Minneapolis, Role of the Surgeon in the Treatment of Pyogenic Infections.  
Dr. Alvin G. Foord, Pasadena, Calif., Pathology of Tumor Nodules in the Breast.  
Dr. Roger Anderson, Seattle, Fractures of the Shaft of the Femur.  
Dr. Harry H. Bowing, Rochester, Minn., Advancements Made in the Treatment of Carcinoma of the Rectum.  
Dr. Edmund W. Butler, San Francisco, Acute Traumatic Injuries of the Chest.  
Dr. Milton J. Rosenau, Chapel Hill, N. C., Pneumonia: Epidemiology, Treatment and Prevention.  
Dr. Jacob Arnold Bergen, Rochester, Minn., Diverticulosis and Diverticulitis of the Large Intestine.  
Dr. Irvine McQuarrie, Minneapolis, Pathogenesis and Treatment of Edema in Children.  
Dr. Nathaniel G. Alcock, Iowa City, Treatment of Enlarged Prostate.  
Dr. Arnold S. Jackson, Madison, Wis., Gallbladder Operations.  
Dr. William J. Kerr, San Francisco, Angina Pectoris, New Concepts of Etiology and Treatment.  
Dr. Howard C. Naffziger, San Francisco, Peripheral Nerve Injuries and Their Treatment.  
Dr. Irvin Abell, Louisville, Ky., President of the American Medical Association, Correction of Retrodisplacements and Complete Prolapse of the Uterus.

Dr. Rosenau will address a public meeting Thursday evening on "Fads and Fancies in Preventive Medicine and Public Health" and the annual banquet Friday evening on "Serendipity."

### VIRGINIA

**Director of State Hospitals Appointed.**—A central office for supervision of the state hospitals and the Colony for the Epileptic and Feeble-minded has recently been established in Richmond with Dr. Hugh C. Henry, Petersburg, as director. Dr. Henry, a graduate of the Medical College of Virginia in 1896, has been superintendent of the Central State Hospital at Petersburg since 1924.

### WASHINGTON

**Courses in Obstetrics.**—Dr. Everett D. Plass, professor of obstetrics and gynecology, State University of Iowa College of Medicine, Iowa City, recently gave a group of lectures on obstetrics in Yakima, Walla Walla, Spokane, Bellingham, Tacoma, Chehalis and Seattle. The short courses continued for three days each.

**State Medical Meeting at Bellingham.**—The Washington State Medical Association will hold its annual meeting at the Bellingham Hotel, Bellingham, August 29-31, under the presidency of Dr. J. Reid Morrison, Bellingham. The speakers will include:

Dr. Byron F. Francis, Seattle, Recent Advances in Our Knowledge of Pulmonary Emphysema.  
Dr. Edwin E. Osgood, Portland, Principles Which Should Govern the Therapeutic Use of Sulfanilamide.  
Dr. Don C. Sutton, Chicago, Prophylaxis of Age.  
Dr. Edward C. Moore, Los Angeles, Surgical Analysis of Biliary Surgery with Technic for Cholecystectomy.  
Dr. Frederick Lcmere, Seattle, Treatment of Mild Depression, A Common Neuropsychiatric Disorder Frequently Seen by the General Practitioner.  
Dr. David Metheny, Seattle, Nutritional Deficiencies Complicating Surgery of the Gastrointestinal Tract.  
Dr. Ralph H. Loe, Seattle, Gastroscopy.

The Public Health League of Washington and the Washington State Medical Service Bureau will hold their annual meetings during the session. The woman's auxiliary to the state society will also meet.

### WISCONSIN

**Society News.**—Drs. Paul Padgett, Baltimore, and Harold W. Shutter, Milwaukee, addressed the Columbia-Marquette-Adams County Medical Society, Wisconsin Dells, recently on "Care and Treatment of Syphilis" and "Toxemias of Pregnancy" respectively.—Dr. William T. Lindsay, Madison, addressed the Dodge County Medical Society, Beaver Dam, recently, on the disease of the pancreas.—At a meeting of the Kenosha County Medical Society in Kenosha in May Dr. George F. O'Brien, Chicago, spoke on coronary diseases.—Dr. James A. Evans, La Crosse, discussed "Lesions of the Gastro-Intestinal Tract" before the Monroe County Medical Society, Sparta, recently.—At a meeting of the Pierce-St. Croix County Medical Society, Ellsworth, recently, Dr. Willis H. Thompson, Minneapolis, presented papers on "The Use of

Sulfanilamide in the Treatment of Diseases of Children" and "The Immunization of Children Against Whooping Cough, Diphtheria and Smallpox."—Drs. George W. Stuppy and Willard L. Wood, Chicago, addressed the Rock County Medical Society, Janesville, June 28, on "The Application of Allergy to Internal Medicine."—Dr. Cornelius H. Cremer, Cashton, was recently elected president of the state board of medical examiners.

### PHILIPPINE ISLANDS

**First Preventorium Opened.**—The Quezon Preventorium of the White Cross, first tuberculosis preventorium in the Philippines, was opened in April in San Juan. Dr. Isidro Pertierra is director of the new institution, which has a capacity of 300 beds.

### GENERAL

**Examinations in Internal Medicine.**—Written examinations for certification by the American Board of Internal Medicine will be held in various parts of the United States Monday October 17 and Monday Feb. 20, 1939. Formal application must be received by the secretary, Dr. William S. Middleton, 1301 University Avenue, Madison, Wis., before September 15 for the October examination and before January 1 for the February 1939 examination.

**American Social Hygiene Association.**—The American Society for the Control of Venereal Diseases, Inc., organized in California in 1937, has merged with the American Social Hygiene Association and will function as the Western division of the association, with headquarters at 45 Second Street, San Francisco. The Western division will be under the direction of a Western advisory committee including Drs. Ray Lyman Wilbur, Russell V. Lee, Stanford University, Calif.; Thomas A. Storey, William P. Shepard and Mr. Ray W. Smith, San Francisco.

**Study of Tuberculosis in Newfoundland.**—The International Grenfell Association is conducting a survey of the incidence of tuberculosis in northern Newfoundland. The survey was begun July 1 under the direction of Drs. Charles S. Curtis, medical superintendent of the Grenfell Hospitals in Newfoundland and Labrador, and Theodore L. Badger, Boston, president of the New England Grenfell Association, with the assistance of Dr. Roy M. Seideman, New York. They plan to make a tuberculin study in all age groups with x-ray examinations and studies of family contacts.

**New Journal of Neurology.**—*Confinia Neurologica* is a new journal to be published every two months with the object of "maintaining the mutual relationship of neurology and surgery, oto-ophthalmology, syphilology, endocrinology and radiology." Original articles, reviews, society transactions and book reviews are to be published. The articles may appear in English, French or German; original papers will have summaries in all three languages. Manuscripts, books for review and other communications should be sent to the editor, Dr. Ernest A. Spiegel, professor of experimental and applied neurology, Temple University, Broad Street at Ontario, Philadelphia.

**Reunion of Veteran Medical Corps.**—The medical corps of the various branches of government service are planning a reunion in Los Angeles, September 19-22, in conjunction with the national American Legion convention. Dr. Charles W. Decker has been appointed chairman of the medical corps reunion committee, which has established headquarters at the Ambassador Hotel, 3400 Wilshire Boulevard, Los Angeles. Members of the army, navy, air service and the marine and dental corps are invited to take part in the reunion, which marks the twentieth anniversary of the end of the World War. A luncheon at the Coconut Grove of the Ambassador Wednesday, September 21, will be one feature of the reunion.

**Rural Health Awards.**—Winners in the recent rural health conservation contest conducted by the U. S. Chamber of Commerce in cooperation with the American Public Health Association were as follows:

Northeastern division: Columbia County, N. Y.  
Eastern division: Fayette County, Ky.  
Southeastern division: Pike County, Miss.  
North central division: Woodbury County, Iowa.  
South central division: Amarillo and Potter County, Texas.  
Western division: Clallam County, Wash.

Special awards were presented to Davidson County, Tenn.; El Paso, Texas, and Shawnee County, Kan., for having won the rural health contest twice and for having maintained their previous high standards of achievement during 1937. The rural health contest was financed by the W. K. Kellogg Foundation of Battle Creek, Mich.

**Dr. Heiser to Direct Study of Healthful Working Conditions.**—The National Association of Manufacturers has organized a committee on healthful working conditions and has appointed Dr. Victor G. Heiser, New York, internationally known hygienist for many years with the Rockefeller Foundation, as research director. A survey of plant conditions will be undertaken immediately and an information service will be established for approximately 80,000 factories employing from twenty-five to 2,000 workers. The committee was created recently with a view to assisting American industry in the field of industrial health and with the hope of bringing about a wider extension of medical service for workers. Dr. Donald M. Shafer, formerly of St. George, Staten Island, N. Y., was appointed assistant to Dr. Heiser. Headquarters of the committee are at 14 West Forty-Ninth Street, New York.

**Aero Medical Association.**—The tenth annual meeting of the Aero Medical Association of the United States will be held at Dayton, Ohio, September 2-4, with headquarters at the Biltmore Hotel. Some sessions will be held at Patterson and Wright fields. According to the tentative program, the following will speak, among others:

Capt. Charles T. Goodham, medical corps, U. S. Army, director, department of Aviation Medicine, Randolph Field, Th in the Examination for Flying—A Discussion of the Use of the Electrocardiograph in the Flying Examinations. Its Possibilities and Limitations.  
Capt. Harry G. Armstrong, medical corps, U. S. Army, and John W. Heim, Ph.D., Boston, physiologic research laboratory, Wright Field, Effect of Acceleration on the Living Organisms  
Dr. Ralph N. Greene, Coral Gables, Eastern Airlines, Air Transport Flying from  
Dr. Eldridge S. Adams, Washington, section, bureau of air commerce, U. S. Department of Commerce, Problems Pertaining to the Department.

**Society of American Bacteriologists.**—The fortieth annual meeting of the Society of American Bacteriologists will be held at the Hotel Fairmont, San Francisco, August 30-September 1. Sections have been designated immunity, nitrogen fixation, pathogenic organisms, milk, water, food, methods, germicides, filtrable viruses, yeasts, fermentations and soil. A joint meeting of all sections Wednesday will be devoted to a consideration of enzymes in relation to bacteriology. Speakers will include:

Dr. Monroe D. Eaton Jr., New York, The Soluble Malarial Antigen in the Serum of Monkeys Infected with Plasmodium Knowlesi.  
Dr. Stuart Mudd, Philadelphia, Certain Newer Aspects of the Antigenic Composition of Hemolytic Streptococci.  
Dr. George E. Rockwell, Cincinnati, An Experimental Study of the Treatment of Pneumococcal Toxemia with a Special Carbon Preparation.  
René J. Dubos, Ph.D., New York, Immunization of Experimental Animals with a Soluble Antigen Extracted from Avirulent Pneumococci.  
Benjamin S. Levine, Ph.D., Washington, D. C., Experimental Staphylococemia in White Mice Produced by the Intraperitoneal Injection of Mucin-Suspended Staphylococci.

**Police Seek Wounded Man.**—Physicians are asked to watch for a man named Huron Ted Walters, who may attempt to secure surgical treatment for a gunshot wound about eight inches above the knee. The wounded man is known to be traveling with one Floyd Garland Hamilton, although, in the one instance in which the Federal Bureau of Investigation was told that a doctor was visited, Walters entered the office alone. The men are reported to be in Illinois. Walters is 25 years of age. His description reads: height, 5 feet 8 inches; weight, about 145 pounds; eyes, gray-brown; hair, chestnut; complexion, medium dark; build, medium; race, white; nationality, American; education, grammar school. Hamilton is 30 years of age. His identification is as follows: height, 5 feet 10 inches; weight, 155; eyes, blue; hair, light brown; complexion, medium, sallow; build, slender; race, white; nationality, American. Both men are said to have had grade school education. Physicians visited by either of these men are asked to notify D. M. Ladd, special agent in charge, at Randolph 6226, or room 1900, 105 West Adams Street, Chicago.

## FOREIGN

**Personal.**—Dr. James D. Boyd, lecturer in anatomy, University of Cambridge, has been appointed to the chair of anatomy at London Hospital Medical College, according to *Science*.

**Society News.**—The Association for Photographic and Cinematographic Documentation in the Sciences will hold its annual meeting in Paris October 6-7. All material sent from abroad must be addressed the Musée Pédagogique de l'Etat, 29 rue d'Ulm, Paris (5), Congrès de Documentation Photographique et Cinématographique. The closing date is October 1.

**Congress of Comparative Pathology.**—The fourth International Congress of Comparative Pathology will be held in Rome May 15-20, 1939, under the presidency of Prof. Pietro Rondoni, director of the cancer institute and of the Institute of General Pathology of the Royal University of Milan. The secretary is Prof. Vittorio Zavagli, director of the experimental station for animals, Rome, and the general secretary is Dr. Ugo Frasccherelli, secretary of the National Research Council, Piazzale delle Scienze, Rome. Meetings will be held at the Royal University of Rome and the Institute for Public Health. There will be three sections: human medicine, veterinary medicine and phytopathology. Subjects to be discussed include ultravirus diseases, heredity in pathology, function of the associated antigens and regressive processes in plants.

## CORRECTION

**Infantile Cerebral Palsy.**—Dr. Clarence H. Heyman writes that the sentence in the summary of his article in *THE JOURNAL*, August 6, page 493, which reads "Asymmetrical lesions indicate some factor operating before birth," should read "Asymmetrical lesions indicate a likely traumatic origin during birth, while the symmetrical lesions indicate some factor operating before birth."

## Government Services

### Physician to Advise on Food, Drug and Cosmetic Advertising

Dr. Knox E. Miller, surgeon, U. S. Public Health Service, has been assigned to act as technical consultant to the Federal Trade Commission, passing on medical and other claims made in advertising of food, drug and cosmetic products under the Wheeler-Lea act. Dr. Miller will arrange for such other assistance as may be necessary, "particularly in the line of laboratory examinations." Cooperation with existing federal laboratories is to be continued.

### Examination for Assistant Physician at St. Elizabeths

The U. S. Civil Service Commission announces an open competitive examination for first assistant physician (psychiatrist) to act as assistant superintendent of St. Elizabeths Hospital, Washington, D. C. Applications must be on file with the commission by September 6. If received from the following states, they may be received by September 9: Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming. The salary is \$6,500 a year, with a deduction of 3.5 per cent toward a retirement annuity and a further deduction of \$300 for quarters and subsistence. The duties of the position are "to act as assistant superintendent of the hospital; to exercise general supervision over the medical, scientific and allied professional activities and carry into effect the policies of the superintendent in the care and treatment of patients; and upon authority of the superintendent to plan and initiate, supervise, evaluate and be responsible for the administrative proceedings of the hospital, professional care of the patients and research problems. Competitors will not be required to report for examination at any place but will be rated on the extent of their education and experience. Applicants must have been graduated from a recognized medical school, except that the standing of the medical school may be waived in the case of graduates otherwise qualified who have had one year of satisfactory service in the commissioned medical corps of the Army, Navy or U. S. Public Health Service. They must have had at least ten years of experience in the care of patients with mental disease, five of which must have been in a senior administrative capacity. At least five years of experience must have been acquired within the ten year period immediately preceding the closing date for receipt of applications. Applicants must not have passed their fifty-third birthday, except in the case of persons granted preference because of military or naval service. Further details are given in the application form, which may be obtained from the secretary, board of civil service examiners at any first class postoffice, from the commission at Washington, D. C., or from the district offices of the commission at any of the following cities: Atlanta, Boston, Chicago, Cincinnati, Denver, New Orleans, New York, Philadelphia, Seattle, St. Louis, St. Paul, San Francisco, Honolulu, Balboa Heights, Canal Zone, and San Juan, P. R.



## Foreign Letters

### LONDON

(From Our Regular Correspondent)

July 27, 1938.

#### The Induction of Abortion in a Case of Rape

To the great satisfaction of the medical profession, Mr. Aleck Bourne, who was prosecuted for curetting a girl aged 14, who had become pregnant after rape, has been acquitted. The attorney general, who prosecuted, admitted that if the operation was done to save the mother's life it would not be unlawful, but he contended that the law meant immediate danger to life, not danger to health. In his evidence Mr. Bourne stated that in 1935 he did a similar operation on a girl of 15 and his house surgeon declined to assist him on religious grounds. This refusal led Mr. Bourne to decide that on the next occasion he would obtain the ruling of the court. If there were adequate medical reasons in the widest sense, on his interpretation of the law, based on the everyday practice of reputable members of the profession, he considered it justifiable to terminate pregnancy, and he could not draw a line between danger to life and danger to health. If a doctor waited for danger to life, the woman was past assistance. He emphatically included the preservation of mental health and the health of the nervous system among his indications. He did not think that the physical injuries in the present case would have caused difficulty of delivery, but the circumstances were such as to implant seeds of terror in the girl's mind. Fear and terror were the most serious deterrents to the unfolding of the whole process, so that assistance might be needed. The fact that the girl was a virgin who had been raped was a strong element in making up his mind. Her age was another; the chief bones of the pelvis were not united. Dr. J. R. Rees, medical psychologist, and Mr. William Gilliatt, obstetric surgeon, gave evidence in support of Mr. Bourne's view. Lord Horder said that he was not infrequently consulted in cases in which a severe mental or nervous breakdown seemed likely to occur if pregnancy was not terminated. The operation was justifiable in such cases. The facts of the child's age and the rape would have led him to the same conclusion.

The attorney general suggested that there was a fundamental difference between preserving life and preserving health. He also argued that the operation had not been done only for the purpose of preserving life. Mr. Bourne had never contended that the operation was necessary to preserve the immediate life of the girl. The judge said that as far as he knew a case of this type had never come before a jury in such circumstances. Even among counsel there seemed to have been some doubt about the expression of the law. The case was of great importance to the medical profession. It had nothing to do with the ordinary case of procuring abortion. The judge could not agree with the attorney general that there was a clear dividing line between danger to life and danger to health. Impairment of health might reach a stage where it was a danger to life. If the jury could not say that there was this division into two separate classes, they might, as put forward by the defense, consider the words "for the purpose of preserving the life of the mother" in a wide and liberal sense. In the medical profession there was a great divergence of view. Some persons held that the desire of the woman for the operation was sufficient justification. That was not the law. On the other hand, some objected on religious grounds to the operation's being performed under any circumstances. That was not the law either. "If pregnancy is likely to make a woman a physical and mental wreck," a doctor who operated in that belief did so

"for the purpose of preserving the life of the mother." The jury returned a verdict of "not guilty."

So far the case clears up one uncertainty of the law, but it gives no support to the view that abortion should be legal in a case of rape. The law of abortion is not in a satisfactory state and is under consideration by a committee appointed by the government. In a letter published in the medical journals Lord Horder, Havelock Ellis, Julian Huxley, Langdon-Brown, Prof. J. A. Ryle and other members of the Eugenic Society state that many arguments may be advanced for widening the grounds on which abortion should be permitted, but they deal only with the eugenic one. They think it should be permissible in cases of mental deficiency when the subjects are appropriate candidates for sterilization. This is the law in Denmark, where also incestuous union and rape are sufficient grounds.

#### Overseas Settlement and Population Trends

In the House of Lords an important debate took place on the recent report of the Oversea Settlement Board. The problem is difficult, as, on the one hand, in the present dangerous international situation it is more desirable than ever that the sparsely populated dominions and colonies should be peopled and, on the other hand, the prevalent unemployment makes the dominions unwilling to encourage immigration. The duke of Devonshire, undersecretary for dominion affairs, said that the white population of the empire was about 70,000,000, of which no less than 49,000,000 were congregated in the British Isles. Throughout the last century and up to the great war that white population was expanding rapidly and distributing itself over the empire. But for a variety of reasons the rate of expansion had been slowing down, and if the present tendency was continued the population would before many years become stationary and then rapidly diminish. The fall of emigration was great. In 1913 285,000 British left this country for the dominions and 61,000 returned, a net outward movement of 224,000. In 1937 the outward movement was only 26,000 and 34,000 returned, a net inward movement of 8,000. This was a very serious state of affairs.

Members of the Oversea Settlement Board were brought up against the question of population trends and took expert advice. They were told that to maintain a population a birth rate of about 19½ per thousand was necessary. In 1876 the birth rate of the United Kingdom was 36 but now was a shade over 15 and therefore below the replacement rate. There had been a similar drop in the dominions. In 1911 the birth rate in Australia and New Zealand was 27; today it had fallen to 17.1 in Australia and to 16.6 in New Zealand, in both cases below the replacement rate. In Canada the rate was 20, barely over replacement. But that was not entirely satisfactory, as the large birth rate was confined to one section, while the rest of the dominion had a very low rate. Only South Africa, with a rate of 24, promised to expand.

#### Osteopath Sent to Jail

A school teacher aged 23, who had suffered from diabetes since the age of 19, was under insulin treatment by a physician when a friend advised her to see an osteopath, who used a stethoscope, pulled down her eyelids and told her mother that she had never suffered from diabetes (*THE JOURNAL*, June 25). She was, he said, suffering from anemia, which might become pernicious. He ordered her to starve herself and take orange juice. The girl was so overjoyed that she ran out to her father, who was waiting in a car, and said "I have good news. I have not got diabetes and never had." Later her father telephoned to the osteopath that she had lost weight and disliked orange juice. The reply was "Splendid; tell her to grit her teeth and continue the treatment until she sees me

on Thursday." By that day she had passed into coma. She died a week later in a hospital. At his trial for manslaughter the osteopath said that he found no external symptoms of diabetes and meant to carry out tests on the next occasion. In cross examination he admitted that he had no experience of diabetes. The judge asked why he did not say this when asked whether the girl had diabetes. He made no reply. He was found guilty and sentenced to six months' imprisonment.

### Septic Infection at Necropsies

The Pathological Society of Great Britain has issued a pamphlet of valuable advice on the prevention of septic infection in the performance of necropsies. Proper care should be taken of postmortem gloves. When there are recent cuts or scratches on the hands it is inadvisable to perform necropsies. If during a necropsy the pathologist should prick himself however slightly, whether with a knife or on a jagged bone or tooth, even if he is in doubt whether he has been pricked at all he should stop at once, remove his glove and make the wound bleed by digital compression causing congestion, by swinging the arm, by sucking and by putting the hand in hot water. There should not be a minute's delay in carrying out these procedures, and, if possible, the necropsy should be completed by some one else.

### PARIS

(From Our Regular Correspondent)

July 23, 1938.

### Director of Pasteur Institute Honored in United States

During the recent visit of Dr. Louis Martin of Paris to the United States the degree of doctor of laws was conferred on him by both the University of Pennsylvania and the University of Montreal as a recognition of the many important contributions which he has made in the field of bacteriology. He was elected director of the Pasteur Institute of Paris after the death of Prof. Emile Roux.

### Lister Medal Awarded to Prof. René Leriche

A jury including representatives of the Royal College of Surgeons of England and also that of Ireland, as well as of the faculties of the Universities of Edinburgh and of Glasgow, has awarded the Lister medal to Prof. René Leriche. This medal is considered a great honor and was awarded as a recognition of the work of Professor Leriche in experimental and clinical surgery.

### A Peculiar Type of Echinococcus of the Liver

Reference has been made in a previous letter to the occurrence in eastern France of a form of echinococcus disease of the liver which is not only difficult to diagnose before operation but resembles so little the usual gross appearance of echinococcus disease of the liver as to be unrecognizable as such at operation. A recent case, reported by Drs. Gricouff and Agron at the June 15 meeting of the Académie de chirurgie of Paris, occurred in a section of France which is relatively far removed from the area in which the earlier cases were found. A woman aged 35, the wife of a farmer, had never been ill until January 1937, when she complained of fatigue, anorexia and occasional pain in the right side of the abdomen, all of six months' duration. Nothing objective was found at this time, but in October of the same year marked icterus and acholia of the stools were noted, which had been present for about six weeks. The liver was found to be greatly enlarged but there was no splenomegaly. X-ray examination for biliary calculi was negative, as was the Wassermann test. A preoperative diagnosis of calculous obstruction of the com-

mon duct was made. At operation, examination of the gall-bladder, extrahepatic biliary ducts and pancreas failed to reveal anything abnormal. On the anterior surface of the right lobe of the greatly enlarged liver, three nodules were noted, the largest being the size of a half-dollar (30 mm.). After incision of this nodule, a grayish green liquid escaped and a drain was inserted, from which a large amount of bile and blood escaped. The patient died about seven days after the operation. Histologic study of the hepatic tissue removed at operation revealed the typical picture of an alveolar type of echinococcus disease. Of eighteen cases of this unusual form thus far observed in France, thirteen involved patients who lived close to the Swiss frontier.

The question in such cases is whether *Taenia echinococcus*, which gives rise to the classic cyst formation, differs from the *tenia* which causes the alveolar type of change in such viscera as the liver. Prof. F. Dève of Rouen, who has studied the disease, expressed the opinion that the alveolar form also is due to *Taenia echinococcus*. In central European countries over 400 cases and in Russia about 209 cases of the alveolar type have been observed. Clinically the picture may resemble cirrhosis of the liver or, as in the case reported, obstruction of the liver or, as in the case reported, obstruction of the common duct. Most frequently the diagnosis of the alveolar type of echinococcus disease is made only after histologic study of the liver tissue. On gross examination the disease is characterized by the presence of a large number of contiguous minute cavities, each showing a more or less dry vesicular lining. In some reported cases it was possible to detect pulmonary metastases on x-ray examination.

The alveolar type has resisted all therapeutic measures, including operation.

### BERLIN

(From Our Regular Correspondent)

June 27, 1938.

### The German Society of Pharmacology

The German Society of Pharmacology met at the end of April in Berlin. Flury of Würzburg, the chairman, made the inaugural address, in which he outlined the scope of pharmacology. This field, he said, is concerned with all that lives, man, animals and plants, and also with all chemical substances as they relate to life. Pharmacology represents a wider aspect of physiology, in which unusual chemical influences, conditions and functions, together with their effects, are the material of study. Two principal provinces of pharmacology may be differentiated: pharmacetics and toxicology. The author emphasized that to be properly equipped as a specialist and teacher of pharmacology the student must undergo a long period of training.

The chief topic for discussion on the first day was local anesthesia. It was stated that besides the importance of the chemical composition the function must also be considered. A sharp distinction must be drawn between surface anesthesia and local anesthesia. Procaine hydrochloride, for example, because of its solubility in water, is unable to adhere to the surface membranes. As Fromherz pointed out, the central nervous system is ten times more reactive to local anesthetics than the peripheral nerves. All attempts at evaluation of the extent of the therapeutic effect of these substances have failed; in each case the clinician has the last word. An important consideration is the detoxicant property of the utilized substance. In resorption, diffusion apparently plays a less important part than the movement through the lymphatics. Kirschner of Heidelberg, a surgeon, gave the clinical lecture. He set forth the advantages of high pressure and local lumbar anesthesia as utilized by him. As contraindications of local anesthesia

he mentioned exophthalmic goiter (on account of the heightened sensitivity to epinephrine), toxic heart disease, nutritional disorders, tissue necroses and circulatory disorders (arteriosclerosis, hypertension and so on). The mortality of lumbar anesthesia amounts to about 1:3,300. The procedure is unsuccessful in about 9 per cent of the cases. Certain renal manifestations may appear, as well as paralysis of the muscles of the eyes, paralysis of the lower half of the body and meningism. On the other hand, Kirschner stated, the fact remains that no other type of anesthesia produces a similar relaxation of the abdominal walls.

The chief theme on the second day was the etiology of cancer. Butenandt discussed the cancerigenic carbohydrates from the chemical standpoint. These substances are of particular interest since their most effective representative, methylcholanthrene, shows itself to be related to that important group of substances known as the sterols (included in which are bilic acid, glandular preparations, corticosterone, vitamin D, digitalis glycosides, saponin and toad's venom). The author uttered a warning against the ill considered statement that estrogen is a cancerigenic substance. Gye of London delivered a lecture on the differentiation of external cancerigenic factors, or remote causes, and proximate, or intimate causes. According to his opinion, virus plays an important part as an intimate cancerigenic factor. The pharmacologic effects of benzopyrine were then thoroughly discussed. Professor Roessle, Berlin pathologic anatomist, then upheld, in opposition to Gye, the hypothesis of a diversified causation of cancer, which excludes the presence of virus as a universal "intimate cause."

On the third day the problem of coffee came in for thorough discussion. After a comprehensive general introduction by Straub of Munich, Eichler of Breslau submitted a detailed pharmacologic report. He pointed out that chronaxia of muscles is more plainly reduced than chronaxia of nerves. The completely developed fatigue is more quickly abolished by caffeine. Since the substance tends to increase the myocardial tonus, it is more fit for the overcoming of high resistance than for performance of greater volume-work. For the increase in secretion of gastric juice stimulated by caffeine, it is precisely the roasted products which are of importance. The rate of gastric evacuation remains unchanged. Some manifestations of diarrhea are perhaps ascribable to the presence of choline. In human milk 1 per cent of the administered caffeine remains undecomposed. The basal metabolic rate increases by from 6.5 to 23 per cent. Eichler has been unable to verify the damage to the germ cells following administration of caffeine in massive doses observed by Stieve, Berlin anatomist. Stepp of Munich read the clinical lecture. He recommends the use of caffeine in the treatment of cardiac disorders when the previous degree of digitalization is not known, as well as in the treatment of bradycardic types of insufficiency. Caffeine also acts favorably in cases of collapse from uncertain causes of asthenic persons with hypotonic manifestations. Patients with gastro-enterocolitis are unable to tolerate caffeine. In cases of gout and diabetes small amounts of caffeine are innocuous.

The president of the society provided an explanatory talk in which he emphasized that the coffee problem is not exclusively a caffeine problem. The chemical interrelation and the combined effect of caffeine and other ingredients of the coffee bean offer many unsolved problems. To what extent caffeine as a supplementary food is beneficial or deleterious to general health is, according to the present state of our knowledge, primarily a question of the amount of caffeine ingested. Additional factors of importance are the source of the coffee and the type of the roasting and other preparative processes. Clinical

data have shown that the ordinary use of coffee is unaccompanied by any harmful effects, either temporary or permanent.

## AUSTRALIA

(From Our Regular Correspondent)

July 5, 1938.

### National Health Insurance

The bill for national health and pensions insurance has now been passed by both houses of the commonwealth parliament. The scheme will come into operation in January 1939, and plans for its organization are already in progress. A royal commission is to be appointed to investigate fully the question of capitation fees payable to practitioners working under the scheme, and the British Medical Association in Australia is collecting statistical evidence to present to the commission in support of its claims for a higher capitation fee than that originally proposed by the government. Every member has been asked to supply any information he can which is relevant to the investigation, with particular reference to income as derived from lodge and private practice. The association intends raising an emergency fund of £20,000 to cover expenses such as statistician's fees and traveling expenses of members giving evidence. Each member of the association is expected to contribute £10 to this fund.

An adequate capitation fee is of vital importance to the profession in Australia, as over 80 per cent of the population are brought under the scheme. Five per cent of the remainder are unemployed, so that only 15 per cent of the people will receive medical treatment as private patients. It was pointed out in the first progress report of the national insurance commission in 1926 that 800 friendly society contracts were a burden for any one man working in a metropolitan district. This figure represents about 2,000 persons. It is estimated that about 10,000 visits a year would be required of such a practice, using the English panel experience of five visits a year per patient. The gross income under the national insurance scheme derived from 2,000 insured people would be £1,100. Estimating the minimum overhead expense in running a general practice at £500, this leaves a net income of £600 a year. Under the insurance scheme the average number of contracts per practitioner will be approximately 600, representing 1,500 people, 7,500 visits and a net income of £375 a year. Allowing for fees paid for extra services and the small amount of private practice, it would be difficult for any practitioner to receive a net income exceeding £600 per annum. Furthermore, with an income of £600, after a long and expensive training and after purchasing a private practice, no time and little money would be available for graduate study, and it would be difficult to maintain an efficient service for the community under such terms.

Calculation of the per capita payment was made by the government as follows: The average contract fee paid by friendly societies was taken as 29 shillings. The average number of persons covered by one contract fee was taken as 3.2. For extra service required under the insurance as against friendly society service, a ratio of 2 shillings in 9 shillings was agreed to. Twenty-nine shillings divided by 3.2 gave 9 shillings, which, together with 2 shillings for extra service, made 11 shillings the capitation fee. The assumption that the rates of payment for friendly societies contract practice were fair and adequate, especially when entirely changed conditions were to be dealt with, is itself questionable. Apart from this, a reliable calculation from census figures indicates that the family unit of 3.2 is too high an estimation and that a figure of not more than 2.5 should have been taken. The effect of this figure

is to change the per capita payment of 11 shillings to 15s. 3d. Moreover, insurance practice will be operating under much altered conditions. At present the inadequacy of friendly society practice is offset to some extent by income derived from private practice. Under the insurance scheme the ratio of contract to private practice will be greatly increased. The royal commission is to be appointed by the government and for this reason is considered by the British Medical Association to be in reality a court of inquiry appointed by one of the parties. Although members are prepared to present evidence to the commission, it is officially stated that they will not accept its findings unless an efficient medical service for the public and satisfactory conditions for practitioners are provided.

#### Queensland's Medical Problems

Plans for the complete reorganization of the hospital system in Queensland have been launched. They include the elimination of the honorary system of medical attendance and in many respects may indicate a complete change in the relationship between the state, the medical profession and the public. This move was intimated some months ago in an open letter to the profession signed by Sir Raphael Cilento, director general of health and medical services and honorary professor of social and tropical medicine in the University of Queensland. It was pointed out that the honorary system had been rendered an anachronism by the fact that complete medical service was beyond the means of 80 per cent of the people unless they were members of some contributory scheme and that the greater burdens laid on the middle class made the maintenance of health—that is, preventive medicine—and the restoration of health as a community measure—that is, cheap hospitalization—the main aspects of medical practice of the immediate future. It was implied that only by making medical service a government function could the position be satisfactorily dealt with. It was pointed out also that the health service of the future will inevitably conform to the governmental framework. There will be no interference with medicine as a science. What the public demands is the right to say not how medicine shall be practiced but how it shall be purchased and paid for.

For some years the state government has been seriously bent on a hospitalization program. The commonwealth government has now superimposed a scheme for national health insurance. The reorganization of the hospital system would suggest that the state intends to continue with its own design for medical treatment. Whether Queensland will be able to bear the economic strain of a large program for hospitalization in addition to that of national health insurance remains to be seen.

#### Diabetic Association

Steps are now being taken to form an Australian branch of the Diabetic Association. The parent body in London, founded about three years ago, consists essentially of persons with diabetes, together with several medical practitioners, dietitians, almoners and others who are in daily contact with sufferers from the disease. One of the chief objects of the association is the reeducation of all persons in the community as far as their outlook on persons with diabetes as a class is concerned and to spread the knowledge that such persons today are efficient and employable. The association also attempts to overcome the natural feeling of despair among patients at the discovery of their affliction. The effect of belonging to a well organized diabetic family facing a common difficulty is an important benefit, and practical instructions, hints and association news are conveyed to all members by the *Diabetic Journal*. The association provides information about the location of diabetic clinics and of boarding houses where diabetic persons receive special consideration, about

holiday camps for juvenile sufferers, about local sources of insulin and other equipment, and about district nurses who visit the infirm diabetic person. While there are several members of the parent association in Australia, the great distance from headquarters, together with the different conditions, makes it scarcely possible for them to obtain the full benefits of membership. It is to provide diabetic Australians with information and social care of the type supplied in England that a branch is being formed in Australia.

#### Contraception and Abortion

In Australia 31 per cent of all first births are the result of extramarital conception. Also, during the last twenty years the percentage of deaths from illegal operations has been multiplied by four; it now represents 20 per cent of total maternal deaths. These facts point to a loosening of moral standards, with consequent increase in intemperate contraception and criminal abortion for the failure of contraception. Intemperate contraception and criminal abortion have destroyed and are destroying the health of thousands of women. In the opinion of Dr. McLelland man is the defaulter. He considers that the feminist movement was a frank mutiny conditioned by man's failure in the primary duty of sustenance and protection of woman. The increasing extent to which women are employed in industry and commerce, the increasingly high wages paid to women and their insistent demands for independence, and the consequent unwillingness of young women in employment to enter matrimony are important factors in the increase of abortion. Added to these is the changed attitude of men toward women.

### Marriages

PAUL B. FERRARY, Totowa, N. J., to Miss Ethel M. Kroger of Chevy Chase, Md., in Washington, D. C., July 20.

ELIZABETH FISHER to Mr. Homer Bush Martin, both of Regina, Sask., Canada, in Eau Claire, Wis., May 21.

HERBERT PERRIN HARKINS, Bala Cynwyd, Pa., to Miss Anna Catherine Shepler of Melrose Park, July 16.

FLOYD J. FOWLER, Akron, Ohio, to Miss Marian Vaughan Holoman of Rich Square, N. C., June 23.

WILLIAM BOYD TURNER, Carlisle, Pa., to Miss Katherine Anna Burr of Collingswood, N. J., July 9.

WILLIAM HANLON OATWAY JR. to Mrs. Margaret Ann Pyre Kenaston, both of Madison, Wis., June 4.

CHARLES FOSS FERGUSON to Miss Elsa Knutson Cosner, both of Boston, at Cambridge, Mass., June 16.

PAUL G. ALBRECHT, Cleveland, to Mrs. Evelyn Burford Randolph of New York, August 4.

REUBEN LOUIS KAUFMAN, Whittier, Calif., to Miss Lillian Skolnick of Los Angeles, June 19.

GEORGE W. WILHITE, Corsicana, Texas, to Miss Clara L. Mitchell of Taylor, March 31.

RAYMOND M. WALDKIRCH, Wayside, Neb., to Miss Fern Denys of Green Bay, June 9.

JOHN P. BARTLE, Langdon, N. D., to Miss Mercedes Mettel of Saskatoon, Sask., May 23.

CHESTER M. KURTZ, Madison, Wis., to Dr. ESTHER CALDWELL of St. Croix Falls, May 21.

IVAN B. TAYLOR to Miss Myra Elizabeth Williamson, both of Madison, Wis., May 28.

FREDERICK J. KATTEYER to Miss Marie Camblos, both of Philadelphia, July 14.

ROGER J. MINNER, Egypt, Pa., to Miss Helen A. Storm of Fullerton, July 16.

GEORGE O. DUNKER to Miss Constance Keyser, both of Milwaukee, July 9.

EDWIN A. SEIFERT to Miss Evelyn Rich, both of Glen Ridge, N. J., June 25.

FELIX F. HOROWITZ to Miss Martha Kramer, both of Brooklyn, June 14.

## Deaths

**Frederick Tilney**, New York, since 1914 professor of neurology and neuro-anatomy at Columbia University College of Physicians and Surgeons, New York, died, August 7, aged 62. Dr. Tilney was born in Brooklyn, June 4, 1876. He received the bachelor of arts degree from Yale University, New Haven, Conn., in 1897 and the medical degree from Long Island College Hospital, Brooklyn, in 1903. During 1903 and 1904 he studied in Berlin. On returning to this country, he worked at the Long

Island College Hospital under the fellowship founded by Dr. Joshua M. Van Cott, in anatomy, embryology and nervous diseases. He became instructor in anatomy at Columbia University College of Physicians and Surgeons in 1909, about which time he reorganized the neurologic department of the Vanderbilt Clinic. From 1919 to 1924 he was director of neurology at the New York Post-Graduate Medical School. Dr. Tilney was a member of the Medical Society of the State of New York, the American Psychiatric Association, the Association for Research in Nervous and Mental Disease and the American Association of Anat-



FREDERICK TILNEY  
1876-1938

omy and was also a past vice president and trustee of the New York Academy of Medicine and past president of the American Neurological Association. In 1935 he was appointed medical director of the Neurological Institute, after having been several years chairman of the institute's committee on medical research. He was also consultant in neurology at the Presbyterian, Babies, Roosevelt, Brooklyn, Methodist, Episcopal and the Greenwich hospitals. Dr. Tilney was chairman of the medical board of the State School for Delinquent Boys at Warwick, N. Y., founded in 1932. He accomplished research work, including the extensive Matheson Survey directed by the Neurological Institute to study cases of the socially maladjusted persons and criminals. In 1912 he took the degree of doctor of philosophy at Columbia for his thesis on "Contributions to the Study of Hypophysis Cerebri, with the Especial Reference to Comparative Histology," and in 1929 received the honorary degree of doctor of science. He was the co-author, with Dr. Henry A. Riley, of "The Form and Functions of the Central Nervous System"; author of a two-volume work "The Brain from Ape to Man" and of "Master of Destiny."

**Pol N. Coryllos** Ⓢ New York; Université de Paris Faculté de Médecine, France, 1914; professor of surgery at the University of Greece from 1919 to 1923; came to the United States in 1923 and accepted the chair of professor of clinical surgery at Cornell University Medical College, a position he held for many years; clinical professor of thoracic surgery at the New York Polyclinic Medical School and Hospital; member of the American Association for Thoracic Surgery; fellow of the American College of Surgeons; received honors from several countries for his services during the World War; had been surgeon general in the Greek Army from 1919 to 1923; at various times director of thoracic surgery, Metropolitan Hospital and the Polyclinic, New York, and Sea View Hospital, Staten Island; thoracic surgeon to the Cornell Clinic; consulting thoracic surgeon to the Broad Street Hospital, New York, National Variety Artists Sanatorium, Saranac Lake, and Ulster County Sanatorium, Kingston; was director of surgery at the Veterans Administration Facility, Castle Point; author of "The Surgery of Pulmonary Tuberculosis"; and con-

tributed numerous articles to publications in this country and France; aged 57; died, July 26, in the Manhattan General Hospital of lobar pneumonia and cerebral hemorrhage.

**Spencer Michael Free**, Du Bois, Pa. College of Physicians and Surgeons, Baltimore, 1880; member of the Medical Society of the State of Pennsylvania; fellow of the American College of Surgeons; formerly lecturer on medical ethics and economics at his alma mater; inspector for the state board of health, 1887-1905; surgeon to the Du Bois and Maple Avenue hospitals; senior surgeon to the Adrian Hospital, Punxsutawney; consulting surgeon to the Indiana (Pa.) Hospital; formerly member of the school board; aged 81; died, May 16.

**Arthur Matthew Kane**, Brooklyn; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1893; fellow of the American College of Surgeons; adjunct professor of dermatology and syphilology at the New York Polyclinic Medical School and Hospital, New York; served during the World War; on the staffs of the New York Foundling Hospital and the New York City Hospital; aged 70; died, June 5, of pneumonia.

**Alfred Edward Maumenee**, Birmingham, Ala.; Medical College of Alabama, Mobile, 1905; member of the Medical Association of the State of Alabama and the American Academy of Ophthalmology and Oto-Laryngology; fellow of the American College of Surgeons; on the staff of the Hillman Hospital; aged 58; died, June 5, in a hospital at Greenville, of heart disease.

**Gilbert Dana Murray**, Spring Lake, N. J.; Medico-Chirurgical College of Philadelphia, 1889; member of the Medical Society of the State of Pennsylvania and the American Laryngological, Rhinological and Otological Society; fellow of the American College of Surgeons; aged 72; died, May 22, in the Wills Hospital, Philadelphia, of a cerebral hemorrhage.

**John Lincoln Porter** Ⓢ Evanston, Ill., professor emeritus of orthopedic surgery at Northwestern University Medical School, Chicago, died, August 11, of coronary occlusion, aged 74. Dr. Porter was born in Alstead, N. H., July 2, 1864. He received the medical degree from Northwestern University Medical School in 1894. In 1900 he became professor of orthopedic surgery at the University of Illinois College of Medicine, where he served until 1917 when he became professor of orthopedic surgery at Northwestern. He was a

member of the American Orthopedic Association, past president and for many years treasurer; member of the Western Surgical Association, the Clinical Orthopedic Society and the American Academy of Orthopedic Surgeons and fellow of the American College of Surgeons. The silver jubilee of the Clinical Orthopedic Society in October 1937 was dedicated to Dr. Porter, who founded the society twenty-five years before, when it was known as the Central States Orthopedic Club. The John Lincoln Porter Memorial Lecture was established at the meeting. Dr. Porter was consulting orthopedic surgeon to the Evanston Hospital and St. Luke's Hospital, Chicago, and for many years attending orthopedic surgeon to the Cook County Hospital, Chicago. He was appointed a member of the advisory board of orthopedies during the World War and later was a major in the medical corps.

**Charles Mortimer Culver**, Delmar, N. Y.; Albany Medical College, 1881; member of the Medical Society of the State of New York, and the American Ophthalmological Society; translated under the supervision of the author, Dr. Edmund Landolt, "The Refraction and Accommodation of the Eye, and Their Anomalies"; aged 81; died, May 8.



JOHN LINCOLN PORTER  
1864-1938



**Daniel Bailey Hardenbergh** \* Middletown, N. Y.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1891; formerly member of the board of education; on the staff of the Elizabeth Horton Memorial Hospital; aged 72; died, May 5, of cerebral arteriosclerosis and nephritis.

**Robert Hughes Millwee** \* Dallas, Texas; Southern Methodist University Medical Department, Dallas, 1913; member of the Radiological Society of North America and the American College of Radiology; served during the World War; on the staff of the Dallas Methodist Hospital; aged 54; died, June 22.

**Fred Baker**, Point Loma, Calif.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1880; member of the California Medical Association; formerly member of the board of education of San Diego; aged 84; died, May 16, in the Mercy Hospital, San Diego, of intestinal obstruction.

**Charles Menger Truschel** \* Wheeling, W. Va.; University of Pennsylvania Department of Medicine, Philadelphia, 1904; served during the World War; aged 58; on the staffs of the Ohio Valley General Hospital and the Wheeling Hospital, where he died, May 22, of cerebral hemorrhage and hypertension.

**Arthur John Stuenkel**, Hinsdale, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904; member of the Illinois State Medical Society; on the staff of the Elmhurst (Ill.) Hospital; aged 57; died, June 4, of chronic myocarditis and coronary sclerosis.

**Frederick Edward Jones** \* Beaver Falls, N. Y.; Bellevue Hospital Medical College, New York, 1892; formerly secretary of the Lewis County Medical Society; for many years member of the board of education; on the staff of the Lewis County General Hospital, Lowville; aged 69; died, May 31.

**James Sawyer**, Mansfield, Ohio; Bellevue Hospital Medical College, New York, 1897; at one time member of the board of health of Asheville, N. C., and superintendent of health of Buncombe County; aged 64; died, June 2, in a hospital at Toledo of cerebral hemorrhage and arteriosclerosis.

**William Williams Betts** \* Chadds Ford, Pa.; Jefferson Medical College of Philadelphia, 1907; past president of the Chester County Medical Society; aged 64; on the staff of the Chester County Hospital, West Chester, where he died, June 12, of coronary thrombosis and bronchial asthma.

**James Williams Skebelsky** \* Chicago; Northwestern University Medical School, Chicago, 1907; formerly clinical assistant in dermatology and later instructor at his alma mater; on the staffs of the South Shore and South Chicago hospitals; aged 56; died, June 1, of coronary thrombosis.

**Thomas Franklin Erdman**, Reading, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1907; served during the World War; formerly assistant superintendent of the State Hospital, Norwich, Conn.; aged 54; died, May 21, of cirrhosis of the liver and ascites.

**John Milton Mabbott** \* New York; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1884; formerly secretary of the International Spanish Speaking Association of Physicians, Dentists and Pharmacists; aged 75; died, July 1.

**Francis McQuillan**, Washington, D. C.; Georgetown University School of Medicine, Washington, 1903; member of the Medical Society of the District of Columbia; aged 60; on the staff of the Providence Hospital, where he died, June 10, of diabetes mellitus.

**William Henry Abbott**, Cambridge, N. Y.; Hahnemann Medical College and Hospital, Philadelphia, 1911; member of the Medical Society of the State of New York; aged 63; died, June 8, in the Mary McClellan Hospital of tuberculosis of the spinal column.

**Thomas B. Miller**, Richland, Ga.; University of Georgia Medical Department, Augusta, 1875; member of the Medical Association of Georgia; formerly mayor, member of the city council and board of education; aged 84; died, in June, of pneumonia.

**John Henry Rose**, Geneva, N. Y.; University of the City of New York Medical Department, 1892; served during the World War; aged 71; died, May 6, in the Clifton Springs (N. Y.) Sanitarium and Clinic of arteriosclerosis and pernicious anemia.

**John Patrick Cantwell McManus**, New York; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1897; for many years on the staff of the Bellevue Hospital; aged 71; died, June 22, in the Kingston (Ont.) General Hospital.

**Isaac Wright Short**, Elkhart, Ind.; Bellevue Hospital Medical College, New York, 1888; member of the Indiana State Medical Association; aged 74; died, June 4, of gastric hemorrhage, cerebral hemorrhage and diabetes mellitus.

**Samuel Stalberg** \* Atlantic City, N. J.; University of Pennsylvania Department of Medicine, Philadelphia, 1902; served during the World War; aged 59; was found dead, May 13, of illuminating gas poisoning, self administered.

**Bancroft Frederic Bishop**, Garrattsville, N. Y.; Long Island College Hospital, Brooklyn, 1886; member of the Medical Society of the State of New York; for many years county coroner and health officer; aged 79; died, May 10.

**Harold Le Fevre Van Norstrand**, Kingston, N. Y.; Long Island College Hospital, Brooklyn, 1921; member of the Medical Society of the State of New York; aged 41; on the staff of the Benedictine Hospital, where he died, May 15.

**Thomas Jefferson Blackwell**, Nacogdoches, Texas; Barnes Medical College, St. Louis, 1910; member of the State Medical Association of Texas; aged 65; formerly on the staff of the City Memorial Hospital; died, May 23.

**Pedro Perea Fajardo**, Mayaguez, P. R.; Ohio Medical University, Columbus, 1905; member of the Medical Association of Puerto Rico; part owner of the Mayaguez Sanatorium; formerly mayor; aged 58; died in May.

**Guy Ira Robert Lawless**, Danville, Va.; College of Physicians and Surgeons of St. Louis, 1922; Kansas City College of Medicine and Surgery, 1926; aged 42; died, June 13, of illuminating gas poison, self administered.

**George J. Howe**, Central Falls, R. I.; College of Physicians and Surgeons, Baltimore, 1892; member of the Rhode Island Medical Society; at one time school physician and coroner; aged 69; died, June 6, of myocarditis.

**John Smith Redwine**, Jackson, Ky.; Kentucky School of Medicine, Louisville, 1890; member of the Kentucky State Medical Association; aged 75; died, May 28, in the Good Samaritan Hospital, Lexington.

**Daniel Harmon Thweatt**, Eastaboga, Ala.; Birmingham Medical College, 1915; member of the Medical Association of the State of Alabama; aged 48; died, May 27, in the Citizens' Hospital, Talladega.

**Nathaniel S. Greenwood**, Philadelphia; Baltimore University School of Medicine, 1896; aged 71; died, May 27, in the Anderson Hospital of cardiac disease and prostatic hypertrophy.

**Anna Minerva Stanton** \* Pittsburgh; Woman's Medical College of Pennsylvania, Philadelphia, 1897; aged 67; died, May 7, in the Western Pennsylvania Hospital of carcinoma of the rectum.

**Joseph Clive Enos** \* Charleroi, Pa.; University of Maryland School of Medicine, 1904; aged 56; died, May 4, in the Allegheny General Hospital, Pittsburgh, of edema of the brain.

**Mary Jones Brewster**, Wellesley, Mass.; Woman's Medical College of Pennsylvania, Philadelphia, 1892; aged 76; died, June 9, of mesenteric embolus, arteriosclerosis and hypertension.

**John Marten**, Tolono, Ill.; Rush Medical College, Chicago, 1897; member of the Illinois State Medical Society; for many years president of the board of education; aged 80; died, June 7.

**Carl Matthias Pohl** \* Chicago; Rush Medical College, Chicago, 1903; on the staff of the West Suburban Hospital, Oak Park, Ill.; aged 58; died, June 3, of cerebral hemorrhage.

**George Robinson Pirie**, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, Toronto, 1901; L. R. C. P., London, and M.R.C.S., England, 1915; aged 58; died, May 4.

**Henry Nicholas Oestreich**, Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1900; aged 65; died, May 28, of chronic nephritis.

**James M. Fallis**, Luray, Kan.; St. Joseph (Mo.) Hospital Medical College, 1878; aged 90; died, May 22, in Ontario, Calif., of coronary thrombosis.

**Frank Lossing Carpenter** \* Berkeley, Calif.; University of Buffalo School of Medicine, 1891; aged 70; died, May 17, of coronary thrombosis.

**Lloyd Ellenberger Newcomer**, Long Beach, Calif.; Rush Medical College, Chicago, 1903; aged 66; died, May 6, of cerebral hemorrhage.

**Moses Chesley Roberts**, Toronto, Ont., Canada; McGill University Faculty of Medicine, Montreal, Que., 1911; aged 58; died, May 23.

**Joseph Louis Easton**, Ayton, Ont., Canada; University of Toronto Faculty of Medicine, 1898; aged 69; died, May 5.

**John Albert Gallagher**, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1905; died, May 7.

But the gist of the Federal Trade Commission's case against Caldwell's Syrup Pepsin was the misleading name of the preparation. As William L. Taggart, attorney for the commission, pungently puts it in his brief: "The name Syrup Pepsin and advertising clearly indicate to a person that they would not be taking an ordinary laxative preparation, and they

are getting something more than a laxative, something which possesses a curative effect upon various ills of man and they should continually have it on hand and take it."

The Syrup Pepsin people introduced one scientific witness, a chemist, one Harvey A. Seil. The brief brings out the fact that "Seil wandered far from the field of chemistry to that of internal medicine." Of course, the Caldwell concern filed exceptions to the Trial Examiner's findings. These "exceptions," the commission's brief stated, were "full of loose talk and impertinence, and attempt to attack the good faith of the entire proceeding." One piece of "loose talk" by the company's lawyers in the exceptions reads:

"The recklessness of these charges raises the suspicion that they were made for an ulterior purpose possibly instigated by some individual or group who dislikes home remedies for common ailments and would like to have their sale forbidden."

The same old bugaboo that is always raised by "patent medicine" interests when the questions of fraud, misrepresentation and deceit are raised. The old charge—by implication—that the medical profession objects to the sale of "patent medicines" because it cuts into their business, when, as every physician knows, "patent medicine" advertising sends more patients to the doctor's office than does an epidemic. The charge is an ancient, civil smelling red herring drawn across a trail that is already sufficiently malodorous.

The article that appeared in this department of *THE JOURNAL* twenty-three years ago on Caldwell's Syrup Pepsin ended with this sentence: "The lack of any appreciable quantity of pepsin . . . would seem to indicate that the name would constitute misbranding under the federal Food and Drugs Act." We still think so, and it seems strange that Dr. Caldwell's Syrup Pepsin was never so charged under that law.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### HAY FEVER AND ARTHRITIS

*To the Editor:*—A man aged 67 had more than average good health all his life but was a victim of hay fever. In the spring of 1936 he complained of some pain and slight swellings, at first principally in the joints of his fingers and in his wrists. In the last six months he has been confined to the house with a general arthritis. The teeth, tonsils and prostate have been investigated. In the fall of 1936 he had no symptoms of hay fever and again last year he was free from all symptoms of it. In forty-five years' experience I do not recall a similar case. Is it a mere coincidence or are there other cases like it? Could symptoms of hay fever again be activated in the patient and thereby, by the process of "shock," possibly have a favorable effect on the arthritis?

M. L. BARSHINGER, M.D., York, Pa.

*ANSWER:*—It is implied that there may be some connection between the appearance of the arthritis and the disappearance of hay fever and vice versa. Although the data are insufficient to allow one to be certain of the diagnosis, the patient presumably has generalized arthritis of the atrophic variety. Many investigators believe that atrophic arthritis, rather than being antagonistic to any allergic state, is in itself a manifestation of allergy and frequently associated with other allergic reactions. Some regard atrophic arthritis as a reaction to bacterial or food allergens. Some (Brown) contend that atrophic arthritis can be made worse by subsequent attacks of food hypersensitivity, but Bauer never saw a case of atrophic arthritis traceable to food allergy. Young noted that patients with atrophic arthritis are apparently abnormally susceptible to skin allergy (urticaria and allergic dermatitis) but not to hay fever or asthma. He could not prove any connection between arthritis and food allergy. In particular Wolf and Freeman have concluded that the relationship between arthritis and allergy remains unproved. In this case there is probably no direct connection between the appearance of the arthritis and the disappearance of the hay fever except that as the patient is confined to the house he is less exposed to those pollens which offend him. As people grow

older their hay fever often becomes less severe and the disease sometimes stops as suddenly as it appeared in youth.

### References:

- Bauer, Walter: What Should a Patient with Arthritis Eat? *THE JOURNAL*, Jan. 5, 1935, p. 1.  
Brown, G. T.: Allergic Phases of Arthritis, *J. Lab. & Clin. Med.* 20: 247 (Dec.) 1934.  
Freeman, J.: The Present Position of Allergy and Hypersensitivity in Chronic Rheumatism and Arthritis, in *Reports on Chronic Rheumatic Diseases*, London, H. K. Lewis & Co., Ltd., 1935.  
Wolf, H. F.: Is Arthritis an Allergic Disease? *M. Rec.* 139: 527 (May 16) 1934.  
Young, A. G.: Occurrence of Allergic Reactions in Arthritic Patients, *New England J. Med.* 214: 779 (April 16) 1936.

### EPINEPHRINE, MORPHINE AND SALICYLATES IN ASTHMA

*To the Editor:*—I have often heard physicians express the opinion that asthmatic patients should not have epinephrine and morphine administered together or following each other within a few minutes. Is this true? If so, what is the scientific basis for it? I have also heard that acetylsalicylic acid is contraindicated in asthma.

CLAUDE ANDERSON, M.D., Orlando, Fla.

*ANSWER:*—The older school of physicians used a great deal of morphine in the treatment of asthmatic attacks. Considerable success followed; relief was obtained in most cases; nausea and vomiting frequently followed, however, and the danger of hypersensitivity and of addiction were always present. But better methods of diagnosis and more experience have shown that morphine is the drug of choice in "cardiac asthma," that type of sudden dyspnea which occurs in older persons, especially those who have high blood pressure, nephritis or aortic regurgitation. Morphine in large doses works well in such cases and should be given promptly and in doses of from 0.016 to 0.03 Gm. (one-fourth to one-half grain) hypodermically, repeated if necessary. Epinephrine in this group is not indicated; in fact, it may be harmful.

In bronchial asthma, which usually occurs in children and young persons, epinephrine is the drug of choice; in most instances it works promptly and effectively and aside from temporary nervous effects it is relatively harmless and not habit forming. Unfortunately, in a small percentage of cases the asthma is not relieved and epinephrine may be injected frequently and with but little effect; the patients are often in an alarming condition: cyanosis, dyspnea, orthopnea, tachycardia, weakness and inability to take nourishment combine to alarm the patient, the family and the physician. When morphine is given the patient is frequently quieted for some time, but not rarely death ensues suddenly. The explanation is probably as follows: The patient is already in a state of anoxemia, as shown by cyanosis; his bronchial tubes are plugged by inspissated mucus (this has frequently been demonstrated at necropsy); the morphine probably lessens the cough reflex and so increases the obstruction; perhaps the morphine also acts by depressing the respiratory center of the brain. Morphine may also act allergically, causing an acute reaction. In any case the combination of epinephrine and morphine is fraught with danger. Most allergists believe that morphine should be used rarely in bronchial asthma and many never use it at all. In these severe cases of intractable asthma the specialists in this field are apt to try other measures; e. g., 1 cc. of epinephrine may be put into a 2 cc. hypodermic syringe; the needle is inserted intravenously and 1 cc. of blood is drawn up into the syringe; the mixture is then injected slowly into the vein. This works in many cases in which epinephrine subcutaneously fails. Other measures are general anesthesia as advocated by Kahn (*J. Allergy* 8:158 [Jan.] 1937) ether rectally, and various other sedatives. One reassuring factor is that if morphine is not used most of these patients sooner or later emerge from the severe phase of the attack and death is rare unless morphine is given. Many reports on this subject are in the literature; e. g., Dehner (*Klin. Wchnschr.* 6:1412 [July 23] 1927) warns against the use of morphine in discussing two fatal cases of asthma.

The use of acetylsalicylic acid in asthma depends entirely on whether or not the patient happens to be hypersensitive to this drug. If he has previously taken it without trouble he can almost certainly continue using it. Many patients are much benefited by its use. But if the patient has an idiosyncrasy to the drug he must avoid it as he would the most drastic poison, because even a grain or less may throw him into an acute attack of bronchial asthma even to the point of fatality. Not only must he avoid acetylsalicylic acid but also drugs which contain it, such as "Alka-Seltzer." Other coal tar products must be used cautiously, although patients hypersensitive to acetylsalicylic acid can usually tolerate aminopyrine, acetanilid

and sodium salicylate. A wise rule before prescribing is to question all allergic patients as to possible drug idiosyncrasies. Such care pays dividends. Many reports on idiosyncrasy to acetylsalicylic acid are in the literature. Duke (*J. Allergy* 4:426 [July] 1933) suggests testing allergic patients by placing a minute granule of acetylsalicylic acid beneath the tongue. Hypersensitivity will be shown within a few minutes by the usual symptoms of drug idiosyncrasy: anioneurotic edema, urticaria, rhinitis or asthma. Further symptoms may be prevented by rinsing the mouth with dilute acetic acid (vinegar). Prickman and Buchstein (Hypersensitivity to Acetylsalicylic Acid [Aspirin], *THE JOURNAL*, Feb. 6, 1937, p. 445) recently reviewed the subject and reported cases of their own.

#### TREATMENT OF BUERGER'S DISEASE

To the Editor:—What is the best treatment for Buerger's disease?

JOHN W. BOLEN JR., M.D., Beckley, W. Va.

ANSWER.—The use of tobacco in any form should be denied every patient who has thrombo-angiitis obliterans. It is important that the feet be cared for properly if gangrene is to be prevented. A regimen similar to that described for the care of the feet in diabetes is advisable. Preparations containing iodine, merthiolate, sulfonaphthol, phenol (carbolic acid), cresol and saponated solution of cresol should be avoided, as they may cause ulceration or gangrene. Trichophytosis should be actively treated but not with preparations containing salicylic acid, as they may cause ulceration. A safe method of treatment is to soak the feet for half an hour twice daily in a 1:8,000 solution of potassium permanganate.

Local application of heat is advisable and may be applied in the form of radiant heat from carbon filament bulbs placed in a cradle or baker. The temperature about the feet should not exceed 105° C. Exposure to this temperature for an hour two or three times a day is advisable. Warm sitz baths, using water as warm as can be tolerated comfortably, may be used for periods of ten to twenty minutes one to three times each day. Electric pads or hot water bottles should never be applied directly to the skin. Postural exercises may be helpful. The patient should elevate the extremities for one minute, then place them in the dependent position until the rubor becomes maximal and then lie with them in a horizontal position for one minute. These procedures should be repeated five times, two or three times a day. Contrast baths may be advisable. There should be two containers, each large enough to immerse both feet to the midleg. In one container is placed cold water of from 40 to 50° F. and in the other warm water of from 102 to 105° F. The feet are alternately immersed in the water in each container for one minute during a period of about fifteen minutes. This procedure can be repeated two or three times a day. In some instances intermittent suction and pressure (passive vascular exercise) treatment should be carried out for two or three hours daily. Some physicians believe that this method of treatment is valueless, but it is worth a trial in most cases. Intermittent venous obstruction is considered advisable by some physicians. While machines are available which perform this treatment automatically, it can be carried out by placing the cuff of a sphygmomanometer about the thigh or arm. The cuff is inflated to a pressure of about 80 mm. of mercury for two minutes and then deflated for two minutes. This treatment should be carried out for a minimum of four or five hours daily. Some authors feel that a diet high in calcium or the addition of half a teaspoonful of calcium lactate or a heaping teaspoonful of calcium gluconate is advisable an hour before meals. Injections of 250 cc. of 2 per cent solution of sodium citrate as often as every day or as infrequently as two or three times a week for a considerable period may help. The solution is injected at the rate of from 7 to 8 cc. a minute. Injections of hypertonic solutions of sodium chloride may aid. In cases of thrombo-angiitis obliterans without gangrene these injections are given in amounts of from 250 to 350 cc. of a 3 to 5 per cent solution twice or three times a week for about three months. Then the frequency of injection is gradually diminished for about six months. In cases of gangrene, injections are given three times each week until healing occurs or until hopelessness of further treatment has been established. The solution should be injected through a 19 gage needle at the rate of about 30 cc. a minute. One of the best methods of increasing the circulation in thrombo-angiitis obliterans is the repeated induction of fever by means of the intravenous injection of typhoid vaccine. For the convenience of administration, a stock solution should be diluted with physiologic solution of sodium chloride so that 1 cc. contains 100,000,000 killed bacteria. The desired reaction is elevation of the oral temperature to from 101 to 102° F. Chill, headache and malaise may result. Excessive elevation of the oral temperature, severe

chills and serious malaise are not necessary and are to be avoided if possible. The original injection contains from 15,000,000 to 25,000,000 bacteria for a man and from 10,000,000 to 15,000,000 for a woman. Ordinarily, each subsequent dose is increased by from 15,000,000 to 25,000,000 bacteria but the amount injected depends on the reactions. If the reaction to any injection is too severe, the subsequent injection should be increased only slightly or not increased at all. If the reaction is too mild, the next injection should contain from 25,000,000 to 50,000,000 bacteria more than the preceding one did. Injections may be given once or twice a week for six or eight weeks, after which a rest period of several weeks is advisable before another course is begun. Contraindications to the intravenous injection of typhoid vaccine are advanced debilitating diseases, diseases of the coronary and cerebral arteries, chronic nephritis, myocardial insufficiency, active pleurisy or pericarditis, latent or quiescent appendicitis, and cholecystitis. Vasodilating drugs are ordinarily of little use in the treatment of thrombo-angiitis obliterans, since the vasodilating effects are ordinarily slight and transient.

Intermittent claudication can be treated by the use of tissue extracts, most of which do not cause any significant improvement in circulation but only allow the patient to exercise longer before the distress of claudication occurs. Pancreatic tissue extract, supplied by Sharp and Dohme under the label "tissue extract number 568," can be injected into the deltoid muscle in doses of 3 cc. about twice a week.

Severe pain may affect the extremities when the patient is at rest, when trophic changes are present or when the skin is unbroken. In many instances morphine or dilaudid must be used, but habituation should be avoided. Codeine sulfate is efficacious in many instances. The artificial induction of fever by means of the intravenous injection of typhoid vaccine may produce startling relief. Other measures such as intermittent suction and pressure, intermittent venous obstruction and intravenous injection of solution of sodium citrate and sodium chloride should be tried. When pain does not respond favorably to these measures and the patient loses morale and weight and is unable to sleep, section or crushing or injection of alcohol into the posterior tibial, peroneal and sural nerves may produce anesthesia of the skin and relieve pain. In other instances it is advisable to inject alcohol into the spinal canal for the purpose of affecting the posterior nerve roots. Either of these procedures should be carried out only by experienced surgeons.

Gangrene should be kept clean and the extremity should be soaked for from two to four hours daily in a warm saturated solution of boric acid, a 1:8,000 solution of potassium permanganate or a 0.5 per cent solution of chloramine-T. In some instances débridement may be advisable. It is only rarely that a toe can be successfully amputated, for the incision ordinarily does not heal. When fingers are amputated, on the contrary, the wounds almost invariably heal. Other measures, such as those mentioned in the preceding paragraphs, should be used. When massive gangrene affects an entire foot, amputation is ordinarily the best solution. In about 80 per cent of the cases healing follows amputation of the extremity below the knee but it is occasionally necessary to perform reamputation above the knee. Necessity for amputation of the forearm has never been observed.

Removal of the sympathetic nerve supply to the extremity is performed for the single purpose of increasing the blood flow. This procedure does not ordinarily affect intermittent claudication or prevent recurrence of the superficial phlebitis or progression of the disease. It does, however, increase the blood supply to nearly maximum and minimizes the danger of gangrene necessitating amputation. It should be carried out only when trophic lesions are minimal and healing, or when they are entirely absent and when pain which occurs during rest has been almost entirely relieved or is entirely absent. Whether or not the blood supply can be significantly increased by sympathectomy can be determined by thermometric study of the extremity following the artificial induction of fever by typhoid vaccine.

#### References:

- Allen, E. V., and Brown, G. E.: Thrombo-Angiitis Obliterans: A Clinical Study of 200 Cases: II. Treatment and Prognosis, *Ann. Int. Med.* 1:550 (Feb.) 1928.
- Allen, E. V.: Some Diseases of the Peripheral Arteries, *Journal Lancet* 58:80 (Feb.) 1938.
- Barker, N. W.: Results of Treatment of Thrombo-Angiitis Obliterans by Foreign Protein, *THE JOURNAL*, Sept. 19, 1931, p. 841.
- Bernheim, Alice R., and London, Isabel M.: Arteriosclerosis and Thrombo-Angiitis Obliterans: Report of Cases and Treatment, *THE JOURNAL*, June 19, 1937, p. 2102.
- Brown, G. E., Allen, E. V., and Maherner, H. R.: Thrombo-Angiitis Obliterans: Clinical, Physiologic and Pathologic Studies, Philadelphia, W. B. Saunders Company, 1928.
- Herrmann, L. G.: Passive Vascular Exercises and the Conservative Management of Obliterative Arterial Diseases of the Extremities, Philadelphia, J. B. Lippincott Company, 1936.

## REACTIONS AFTER TETANUS ANTITOXIN

To the Editor:—A cattle ranchman, aged 24, was using a pocket knife to trim a horse's tail; he dropped the knife, which stuck deeply into the calf of the leg, making it bleed profusely. This was June 10. A doctor gave him tetanus antitoxin (probably 1,500 units) into the outer upper left arm. He didn't scrub the arm with a brush and soap and water but used only an alcohol swab. During the night of June 10 the patient's arm began swelling and itching; it became swollen to the finger tips and brawny and red. The next day at noon the pulse rate was 104, the temperature 103 F. The eyes were red. The head ached. The neck was slightly stiff. There was paralysis of the left arm. The shoulder was painful and lame. The right arm was swollen and he had severe backache and pain in both knees and calves of the legs. There were anorexia, restlessness and sleeplessness. The treatment was hot water baths including the shoulder and entire arm alternating with cold. Ten cc. of metaphen was injected intravenously with magnesium sulfate by mouth. Two dozen tablets of sulfanilamide were given, three tablets three times a day. Sedatives were administered for rest. Forced fluids and a nourishing liquid diet (beef broth, oyster soup) were prescribed. There was an improvement overnight, the temperature decreased and the swelling and redness of the arm disappeared; but the calves of the legs and knees "feel drawn" and the patient walks "string haltered," raising the knees high at each step. That is the only remaining infirmity. What causes it? Could the tetanus antitoxin have been old or polluted? I don't know what brand was used or how fresh it was. Should I give him more? Are the "lame legs" beginning tetanus or the result of a beginning general septicemia affecting the knee joints and calves? Shall I take a watchful expectancy attitude or give him more metaphen and fresh antitoxin? An outline of treatment with diagnosis of his gait would be appreciated. The punctured wound in the limb is healing and there is no pus or any drainage. The wound was not swabbed out, as it was bleeding so much and was only the size of a small knife blade. He is afraid of any more needle punctures and of tetanus antitoxin.

M.D., Colorado.

ANSWER.—This patient probably suffered an early serum reaction. Serum sickness as a rule is much later in appearing than in this case but if the patient is congenitally sensitive to serum or if serum has been administered previously, the symptoms may come on with almost the rapidity of anaphylactic shock. It is not necessary for the serum to be old or contaminated to produce such a reaction. All the symptoms described, with the exception of the gait, are commonly seen in serum sickness. Transient neurologic phenomena, which would account for the peculiar gait, have been infrequently described in this country but have been rather frequently mentioned in the French literature.

It is difficult to explain the lame legs as a phenomenon of tetanus. They were present the day after the accident. Tetanus as the result of a wound of the leg in an adult is extremely unlikely to appear in less than a week. Tetanus in any case earlier than three days is a great rarity. A beginning general septicemia seems equally unlikely. Such an event should be accompanied by more severe general symptoms. It is altogether likely that the residual symptoms will gradually disappear without treatment.

More antiserum would be likely to produce a reaction even more serious than the initial one. Fatal collapse has followed such procedures. In the World War tetanus was nearly abolished by the use of a single prophylactic injection of antiserum. Tetanus is rather uncommon in persons who are constantly exposed to the organism. These facts would make the appearance of tetanus in this patient a rather remote possibility. In spite of this feeling of relative safety, the patient should be watched for several weeks. If frank symptoms of tetanus appear he should be vigorously treated, but he must be desensitized before any quantity of serum is administered.

## ALKALOSIS

To the Editor:—Please give the physiologic-chemical reactions that occur when one gives (1) saline solution, (2) Ringer's solution and (3) Hartmann's solution in (a) alkalosis and (b) acidosis.

M.D., Tennessee.

ANSWER.—Alkalosis designates an increase in the bicarbonates (alkali reserve) of the blood above the normal level, as from ingestion or administration of alkalis to the extent that elimination by the kidney or bowel is not sufficient to prevent accumulation in the blood, or represents an abnormal increase in the  $pH$  of the blood, as from overventilation (excess breathing) leading to excess loss of carbon dioxide from the blood with the resulting reduction of carbonic acid in proportion to bicarbonate (uncompensated gaseous alkalosis). Treatment of alkalosis, varying with the condition which produced it, is directed toward the correction of the disturbed acid-base balance and dehydration. If the condition is due to excessive alkali ingestion, the alkali should be discontinued and saline solution should be forced by mouth to enable excretion of the excess alkali. Physiologic solution of sodium chloride in large amounts will

help to restore the normal electrolyte pattern in the blood. Alkalosis produced by vomiting, in which severe chloride loss and dehydration occur, should be treated by intravenous injection of large amounts of saline solution (1,000 cc. of 1 per cent sodium chloride every three hours). Alkalosis due to over-ventilation (apapnic alkalosis) may be relieved by rebreathing a 5 per cent carbon dioxide-oxygen mixture.

Acidosis is the term applied to the diminution to a subnormal level of the reserve supply of fixed bases in the blood but has been loosely used to indicate also a decrease in the  $pH$  of the blood. Only severe acidosis is of clinical importance, as in diabetes mellitus, in the terminal stages of chronic nephritis, in Asiatic cholera and in shock, burns, poisoning and fasting. Acidosis is most commonly caused by diabetes in which there is excessive production of beta-hydroxybutyric and acetoacetic acids from dextranated fat and protein metabolism (the condition for which Naunyn originally introduced the term acidosis). In almost all cases of acidosis there is dehydration and loss of base, and treatment consists in rapidly restoring the water balance and acid-base equilibrium to normal by administration of large amounts of a solution which supplies base and water, thus increasing the blood volume, blood pressure, plasma carbon dioxide and urinary output, alleviating coma and offsetting the danger of shock. In mild acidosis the patient is not in coma; sodium bicarbonate is therefore not necessary and considerably less solution is required for restoration of the normal water and base balance.

It may be noted from the foregoing that sodium chloride solution (1 per cent), Ringer's solution (0.65 per cent sodium chloride, 0.030 per cent potassium chloride, 0.025 per cent calcium chloride, 0.020 per cent sodium bicarbonate and 0.001 per cent sodium biphosphate) and Hartmann's solution (lactate-Ringer's solution; 0.20 per cent lactic acid as sodium lactate, 0.6 per cent sodium chloride, 0.04 per cent potassium chloride and 0.02 per cent calcium chloride) all have their places in the treatment of alkalosis or acidosis. Sodium chloride solution overcomes the dehydration and salt depletion; Ringer's solution, in addition to overcoming water and salt depletion, supplies bicarbonate; lactate-Ringer's solution supplies water, base chloride, base bicarbonate and antiketogenic effect. Sodium chloride solution in alkalosis and mild acidosis and Ringer's solution in severe acidosis are the fluids of choice. Lactate-Ringer's solution may be used for the treatment of dehydration with a moderate degree of acidosis or alkalosis.

## SODIUM THIOSULFATE IN ARSENIC POISONING AND RAYNAUD'S PHENOMENON

To the Editor:—I would appreciate information as to the treatment of Raynaud's disease and arsenic poisoning with sodium thiosulfate.

R. O. WHARTON, M.D., Gary, Ind.

ANSWER.—Diametrically opposed opinions have been held by various authors relative to the efficacy of the administration of sodium thiosulfate in the treatment of poisoning with arsenic. The subject has been reviewed by Ayres and Anderson (*THE JOURNAL*, March 19, 1938, p. 886), who have made determinations for arsenic on the urine of forty-nine patients with a variety of cutaneous disorders for which arsenic was suspected as being a possible etiologic factor. Of these patients 8 per cent did not have arsenic in the urine either before or after injection of sodium thiosulfate. The urine of 12 per cent showed less arsenic after than before injection of sodium thiosulfate, and the urine of 80 per cent showed an increase of arsenic after injection of sodium thiosulfate. These authors consider it unequivocally proved that an increase in the excretion of urinary arsenic usually follows the injection of sodium thiosulfate. Most students of the subject agree that in arsenism the use of sodium thiosulfate is of value but clinical experience indicates that it is most efficacious in treating the acute manifestations of arsenic poisoning.

The inquirer's question intimates that there is a relationship between arsenic poisoning and Raynaud's phenomenon. That such a relationship exists has been contended by Kractzer (*New York State J. Med.* 35:1130 [Nov. 15] 1935). He treated seven patients with Raynaud's phenomenon, the urine of all of whom contained arsenic after treatment with sodium thiosulfate. In all instances Raynaud's phenomenon disappeared entirely or was greatly improved after treatment over varying periods with sodium thiosulfate. Another investigator studied the urine of eight patients following the intravenous injection of sodium thiosulfate and was unable to demonstrate significant amounts of arsenic in the urine of any of them. Kractzer feels that lead may occasionally be the etiologic basis for Raynaud's disease, but another investigator who has treated more than 500 cases of carcinoma with lead has noted that none of the patients so treated had manifestations of Raynaud's disease. The subject



is far from settled but it seems desirable to try the effect of intravenous administration of sodium thiosulfate on the Raynaud phenomenon. The drug should be given intravenously twice a week in doses of 0.5 Gm. The solution should be made up fresh from highly purified crystals.

#### APPENDICITIS AND DISEASE OF LUNG

*To the Editor:*—During the last four years I have operated in four cases of gangrenous appendix. In each case I was hesitant about operating because of rales in the base of the right lung posteriorly. The rales were of the fine crepitant type; being in doubt as to whether I was dealing with pneumonia or appendicitis, I was always hesitant to operate until signs became definite. In the last case an embolism occurred in the base of the right lung posteriorly two days after operation. It was a large occlusion involving about half of the lung. Is there any connection between a gangrenous appendix and the right side of the chest? Is there any weakness which would cause the right lung to become involved after an operation of this sort? All these operations were done under spinal anesthesia and all the appendixes were definitely gangrenous.

L. C. POMAINVILLE, M.D., Wisconsin Rapids, Wis.

**ANSWER.**—There is no known direct connection between appendicitis and pathologic conditions in the right chest. The fact that the appendix was gangrenous does not alter the connection. Rarely a subphrenic abscess will occur after a ruptured appendix and will secondarily involve the pleura above the diaphragm. In the case described as an embolism in the base of the right lung posteriorly it is not impossible that this was rather an atelectasis or partial collapse occurring as a result of a mucous plug in the bronchus. Atelectasis may occur with spinal anesthesia and is not really infrequent. The best prophylaxis against massive collapse (atelectasis) is the avoidance of undue preliminary medication. In some places morphine has been abandoned entirely. Differential diagnosis between pneumonia and appendicitis is usually not difficult except in young children. In adults, in cases of pneumonia, the entire right rectus is usually rigid, which is less frequently the case in appendicitis. In addition, of course, there are abnormalities of the lung observed through auscultation, increased respiratory rate, and possibly a cough.

#### RECURRENT CORNEAL ULCERS

*To the Editor:*—A woman, aged 63, has had recurrent corneal ulcers in each eye; about five in one year. For the last two months I have given her ABD capsules twice a day but this week she has had a recurrence. The urine and blood are normal in all respects. The blood pressure is normal. She is 5 feet 3 inches (160 cm.) tall and weighs 130 pounds (59 Kg.). She had been well until two years ago, when she began to have pain in the upper left quadrant and lost 30 pounds (13.6 Kg.) because certain food distressed her. A complete gastrointestinal examination was made and the last part of the transverse and the first part of descending colon were found to overlap each other entirely. Stomach analysis gave negative results. She was given a low residue diet and she has gained 10 pounds (4.5 Kg.) and has little pain in the abdomen. Is it possible that this intestinal condition has anything to do with the frequent corneal ulcers? Would there be any way to prevent these recurrences or anything further to look for as the cause of this condition?

LOUIS S. BOEN, M.D., Conway, Mass.

**ANSWER.**—If the recurrent ulcers are of the usual catarrhal type they may be caused by an accompanying conjunctivitis. The use of 0.2 per cent zinc chloride solution three times a day may clear up the conjunctivitis and prevent recurrences. Larger doses of vitamin A may also be of benefit, twenty drops of halibut liver oil or sixty drops of carotene a day being probably sufficient. Blepharitis, if present, should be treated. The intestinal condition may be an indirect factor by lowering the general nutrition.

#### INTOXICATION OR CEREBRAL CONCUSSION

*To the Editor:*—How often does cerebral concussion simulate intoxication? I am interested in knowing how often patients held for intoxication are later found to be suffering from cerebral concussion.

M.D., Wisconsin.

**ANSWER.**—Simple cerebral concussion rarely if ever simulates intoxication. When it does occur it should be relatively easy to differentiate between them. In simple concussion of the brain without fracture or compression there is usually some disturbance of consciousness ranging from momentary "seeing stars" to temporary unconsciousness. Severe or prolonged stupor or deep coma is not characteristic of simple concussion. These conditions indicate much more grave brain damage or injury. In intoxication the breath has the characteristic odor, the stomach content has alcohol in it and the blood stream is positive for alcohol. There are usually multiple and variable neurologic signs of alcoholism. These are tremulous hands,

positive Quinquad's sign, tremulous speech, tremulous tongue, rapid pulse and a varied type of mental and emotional behavior ranging from violence and garrulosity to an ordinary depressed or sleepy state. Many cases of concussion of the brain result from the indiscreet use of alcohol and an automobile. In a large hospital of 3,300 beds there is an average daily admission of about ten cases of acute alcoholism with lacerations of the scalp. These patients are observed for forty-eight hours for development of complications or objective evidence of organic disease. If none occur at the end of this time they are sent home with the advice to return for a second examination in one week. It is a rare occurrence to have a person held in a police station for intoxication when that person is suffering a cerebral concussion. Severe craniocerebral injuries in association with alcohol must be treated and observed for a period from fourteen to twenty-one days, depending on the extent of craniocerebral damage.

#### SODIUM TETRATHIONATE IN CARBON MONOXIDE POISONING

*To the Editor:*—In August 1933 a report was published in the local newspaper referring to the chemical "Sodium Tetra-Thionate," which was used as a specific therapeutic agent in carbon monoxide poisoning. I have never seen any reports published in the literature and no further mention has been made of this agent. Since I have a supply of this substance and since I have a fair number of these cases, I would appreciate any information you can supply as to use, mode of administration, action and dosage of this drug.

M.D., New Jersey.

**ANSWER.**—No reports on this subject have been discovered in scientific or medical literature. There is no general reason to suppose that so mild an oxidizing agent as sodium tetrathionate would be of any value in carbon monoxide poisoning. Its effect, like that of methylene blue, might tend to produce methemoglobin and thus exacerbate the ill effects of carbon monoxide.

#### MALIGNANT HYPERTENSION AND TERMINATION OF PREGNANCY

*To the Editor:*—A white woman, aged 29, four and one-half months pregnant, has an atrophied and functionless left arm and drags the foot when she walks. This followed a hemorrhage into the internal capsule in August 1937. The blood pressure was 230 systolic, 140 diastolic. The urine was normal. In spite of the fact that she was extremely desirous of having a child, even at the expense of her own life, I demanded the termination of the pregnancy and she reluctantly consented. She was admitted to a hospital in a neighboring town, but after the consulting surgeon examined her he thought best to watch her carefully until seven and one-half to 8 months and then do a cesarean section. If she developed signs of increasing toxemia, he maintained that the abortion at that time would be attended by no more danger than if it was done now. I myself feel that if this woman is allowed to continue her pregnancy to eight months she will certainly have a permanently damaged kidney function or an exaggeration of her vascular condition. The surgeon argues that if she were three months pregnant or less he would terminate the gestation, but since she has progressed to four and one-half months he feels that termination would be as dangerous as letting her go on to eight months. Please give me your opinion.

M.D., Ohio.

**ANSWER.**—In all probability the patient has an essential hypertension of the malignant type. The cerebral accident at the early age of 29 would indicate such a diagnosis. Furthermore, the absence of urinary abnormalities lends credence to this view.

It has been usually noted that patients with such severe hypertension are not likely to continue their gestation to term. One of several accidents is likely to occur. The most frequent complication is the death of the fetus in utero. Occasionally a premature separation of the placenta, abruptio placentae, supervenes in the course of the pregnancy. In the event that the patient successfully carries the baby to term or near term, the fetus is likely to be small, underdeveloped and immature as a result of extensive infarction of the placenta. For these reasons the early interruption of pregnancy is usually considered the safest procedure.

In this case the decision as to when to terminate the gestation will probably not affect the prognosis for the mother and child appreciably. In any event, it is unlikely that a living child will result. The artificial interruption of pregnancy at this time is usually difficult, and operative manipulations carry considerable risk in such cases. It is doubtful whether the artificial termination at or near term will increase the hazard. The likelihood of permanent kidney damage is not an important factor to this seriously ill patient. The hypertension, however, will probably become more severe. Another and perhaps fatal cerebral accident may occur at any time. The patient should be watched carefully and in the event that fetal death occurs a spontaneous evacuation of the uterus may take place. This should offer the best prognosis for the patient.

## EFFECT OF OVARIES ON PITUITARY FUNCTION

*To the Editor:*—Is there any evidence that the ovaries have an inhibitory action on pituitary functioning? A woman, aged 47, received high voltage roentgen therapy (irradiation over the pelvic region) five years ago, to bring about a cessation of menstruation. Her menstruation had been prolonged and excessive for several years previously. Shortly after the roentgen exposure she began to show signs of what has now developed into a well established case of acromegaly. Could there be any connection between the roentgen therapy and the development of the disease? Would high voltage roentgen therapy of the pituitary be advisable at this time?

M.D., Ohio.

**ANSWER.**—The ovaries exercise an inhibitory action on pituitary function. This is demonstrated not infrequently when ovarian function ceases. Even in the normal menopause there is unquestionably a temporary increase in pituitary function. This is more marked in the induced menopause, whether brought about by surgery or by irradiation. This also is usually temporary in nature.

In the case cited it is possible that the irradiation over the pelvic region which brought about the cessation of menstruation just constituted the last straw which is responsible for precipitating the acromegaly. If this was the case there must have been a preexisting tendency to hyperfunction of the pituitary which became exaggerated with the induced menopause. The extent of the acromegaly will probably be the determining factor as to whether or not roentgen therapy at the present time is advisable. If so advanced as to give rise to intractable headache or visual disturbances, the irradiation would probably prove futile. If in a milder form, roentgen therapy is justifiable and might prove beneficial.

## COMPLICATED CATARACT

*To the Editor:*—A man, aged 48, was referred to me to have a cataract removed. Adhesions between the iris and the anterior capsule of the lens are so adherent that it is impossible to dilate the pupil. The patient has become neurotic since the accident to his eye and thinks that if the cataract is removed he will become normal again. Would you think it justified to attempt to do a cataract extraction on this patient?

M.D., Michigan.

**ANSWER.**—There are so many points involved in dealing with a question of this kind that generalization is extremely difficult. In the first place what was the cause of the cataract and consequently what are the chances of useful vision provided a successful extraction is performed? In the second place, this is evidently a cataracta complicata and the chances for successful operation are somewhat poorer in this form. It might be mentioned that extraction of the lens through a round pupil is highly desirable in a neurotic person of 48 but seems hardly possible in the case as described. In the third place, the mental aspect of the patient seems to be none too favorable for the considerable tension and anxiety that the operation induces. Finally, the patient must be disabused promptly of the idea that subsequent to the extraction he will have an eye that will function as normally as before. When all this has been explained to the patient so that he can know what he has to look forward to, the operation may be undertaken if still desired. The mere presence of posterior adhesions does not preclude the likelihood of a successful extraction.

## PARALDEHYDE AND ANALGESICS IN LABOR

*To the Editor:*—Is it safe to give paraldehyde orally in obstetrics? I notice that it is being used in 4 and 5 drachm doses with the same amount of aromatic elixir to produce obstetric amnesia. Would you please discuss the use of it?

M.D., West Virginia.

**ANSWER.**—A patient of average weight can be given 15 cc. (4 or 5 drachms) of paraldehyde orally without endangering life. This dose will produce considerable obstetric amnesia. As a rule, paraldehyde is combined with some other drug to provide more adequate relief from pain. Its administration in benzyl alcohol by rectum has been suggested (Kane, H. F., and Roth, G. B.: *The Relief of Labor Pains by the Use of Paraldehyde and Benzyl Alcohol*, *THE JOURNAL*, Nov. 21, 1936, p. 1710).

The problem of providing relief from pain in childbirth is difficult. A large number of sedative and analgesic drugs have been suggested. The most common are morphine, with or without scopolamine, the barbiturates and paraldehyde. No one drug is ideal, for a drug thus used must be safe not only for the mother but also for the baby and should have no effect on the progress of labor. Most of these drugs, when given in sufficient amounts to produce analgesia and/or amnesia, delay labor and cause fetal asphyxia.\* This interference with the

normal process of labor often results in operative intervention, with increased hazards to mother and baby. The fetal asphyxia necessitates methods of resuscitation with increased fetal mortality. The use of paraldehyde has the same disadvantages.

## URINARY INFECTION WITH STAPHYLOCOCCUS ALBUS

*To the Editor:*—A patient has a *Staphylococcus albus* urinary infection. She complains of frequency and a feeling of pressure over the bladder when she has to urinate. What antiseptic would you advise?

FREDERICK B. DEVITT, M.D., Oneonta, N. Y.

**ANSWER.**—In treating patients with *Staphylococcus albus* infection of the urinary tract, intravenous neosarsphenamine and the instillation of 30 cc. of 5 per cent mild protein silver in the bladder has been most helpful. Frequently there is an accompanying cicatricial urethritis in association with these cases, and dilation of the urethra plus the application of 5 per cent strong protein silver tampons to the urethra will often be worth while. It would also be helpful to eradicate any existing foci of infection.

## WEANING

*To the Editor:*—What is considered the proper time and method to begin weaning a normal breast-fed baby? Both baby and mother are normal in every way and the supply of lactation is adequate. The baby is receiving the usual amounts of cod liver oil, orange juice, cereal, egg yolk and vegetables, at 6 months of age.

M.D., Illinois.

**ANSWER.**—The time for weaning a normal breast-fed baby varies with the condition of the baby and the mother. Usually weaning can commence at about the sixth or seventh month in a healthy baby of good weight. By this time the supplementary foods such as fruits and vegetables have probably been started and dentition should be well under way. The method for weaning should be gradual, one nursing at the breast being supplemented by a bottle feeding daily at the start. Then, after from ten days to two weeks, two daily bottle feedings may be substituted. After another interval three bottle feedings and two nursings are allowed. With such a gradual procedure in weaning, the milk supply in the mother's breast is slowly diminished so that by the time the infant is entirely weaned the mother should experience no difficulty in drying up the remainder of her milk supply.

## ENNJAY SOLVENT NO. 2

*To the Editor:*—I should like information as to the toxicity of the metal cleaner known as Ennjay Solvent No. 2, made by the William J. Hough Company, Chicago. From an industrial point of view would it be considered as toxic as or more toxic to exposed workers than xylene?

M.D., Indiana.

**ANSWER.**—The William J. Hough Company market a metal cleaner under the designation of Ennjay Solvent No. 2, which, however, is believed to be manufactured by the Standard Oil Company of New Jersey. Without actual analysis, it appears that this cleaner's chief component is petroleum naphtha, of a grade akin to Stoddard's solvent. Tests were made for a chlorinated hydrocarbon content and no evidence of such was found. It appears that this cleaner may contain a low percentage of some coal tar derivative, possibly toluene or xylene. This, however, has not been demonstrated. On these assumptions, this cleaner may be regarded as less toxic than toluene under conditions providing equal exposure to the vapors of these individual substances. However, it is to be recognized that the vapors of petroleum naphtha are not entirely innocuous and on occasion have produced both acute and chronic episodes. More nearly exact data possibly may be obtained from the Standard Oil Company of New Jersey and certainly from fractional distillation, should circumstances warrant.

## ROENTGEN THERAPY OF PITUITARY FOR MENORRHAGIA

*To the Editor:*—What is the present status of roentgen therapy over the pituitary gland as treatment for menorrhagia for which there is no demonstrable local cause? Are there any bad after-effects? M.D., Alabama.

**ANSWER.**—Irradiation of the pituitary gland with roentgen rays is usually employed in cases of menopausal disturbances and amenorrhea rather than for menorrhagia. In the hands of experienced roentgenologists practically no apparent harm has resulted from this form of therapy. However, in some young women an undesired permanent amenorrhea has followed such treatment. Of course during the menopause such a result is of no significance. Great caution must be exercised in the use of

roentgen treatment of the pituitary for any purpose, especially by roentgenologists not familiar with this form of therapy. In most cases of menorrhagia during the menopause, radium applied within the uterus or roentgen treatment over the uterus is safer than irradiation of the hypophysis. In young women conservative measures, including rest in bed, oxytocics, thyroid and sometimes other endocrine products, will usually suffice until normal conditions are restored. Of course in every case of severe and prolonged menorrhagia, especially at the change of life, a careful curettement should be performed to rule out the presence of carcinoma.

#### ETIOLOGY OF KALA-AZAR AND GRANULOMA INGUINALE

*To the Editor:*—What is the relationship between the etiologic agent of kala-azar, *Leishmania donovani*, and the so-called Donovan body, frequently described as the specific organism of *granuloma inguinale*? Are they both animal parasites? Some authorities refer to one as a protozoan, the other as a bacillus. What is regarded at present as the causative agent in *granuloma inguinale*? IRVING M. CLYNE, M.D., Far Rockaway, N. Y.

ANSWER.—*Leishmania donovani*, of which the Leishman-Donovan body of kala-azar is the typical vertebrate phase, belongs to the hemoflagellates, which are classified by protozoologists as animal flagellates. There seems fair agreement that the Donovan body described in *granuloma inguinale* is not related to the *Leishmanias* and is probably not an animal organism, but there is considerable difference of opinion as to its exact nature. Many investigators believe that it is an encapsulated gram-negative bacillus (*B. granuloma* or *Klebsiella granulomatis*) related to Friedländer's bacillus. This, however, has not been definitely established and the recent work of Dienst, Greenblatt and Sanderson (*J. Infect. Dis.* 62:112, 1938) indicates that although the Donovan bodies are the etiologic agent of *granuloma inguinale* they are not related to the Friedländer type of bacilli since they were able to produce a typical lesion in a healthy volunteer by artificial inoculation with an exudate rich in Donovan bodies and free from culturable bacteria.

#### STERILIZING RUBBER GLOVES

*To the Editor:*—Please outline a practical method of sterilizing rubber gloves and packing them so that they will be sterile when used. I want information on a method that can be used by one who is practicing general medicine and doing obstetric work where an autoclave is not available.

M.D., Pennsylvania.

ANSWER.—In the absence of facilities for steam sterilization, the following procedure for the sterilization of rubber gloves is suggested:

Insert into the hand of the glove a pack of gauze or other porous material about one-fourth inch thick to hold the rubber surfaces apart. This pad should be inserted as far as the base of the fingers of the glove. Immerse the gloves in a pan of water and boil for at least thirty minutes. After boiling, remove the gloves, dry them with a sterile towel under aseptic technic and then fold them into a sterile towel until needed. Gloves sterilized in this fashion can be put on by immersing in sterile water and drawn on the submerged hand if sterile talcum is not available.

#### CALLAHAN TUBES IN DACRYOCYSTITIS

*To the Editor:*—In the *American Journal of Ophthalmology* (19: 601 [July] 1936) there is an article on the use of the Callahan tubes in chronic dacryocystitis. I should like to know the real scientific nature of this kind of treatment.

GUILLERMO ARAOS FRASER, M.D., Colombia, South America.

ANSWER.—The article referred to was written by Dr. C. N. Spratt, ophthalmologist of Minneapolis, and recorded the relief obtained in sixty-two of sixty-five cases of dacryostenosis by the use of the Callahan tubes. These are thin silver tubes that are introduced into the lacrimal passage and are open at both the upper and the lower end, the latter of which is located in the nose directly under the turbinate. The theory underlying the use of the Callahan tubes is perfectly sound, the purpose being to drain tears through a passage the patency of which is maintained by a foreign tube not subject to scar tissue constriction. The physiology of normal tear drainage is altered by the elimination of the pump action of the sac and of the effect of the ciliated epithelium. Therefore, only gravity remains. Practical objections to the use of the tubes may arise after more clinical experiences have been recorded, but at present the tubes would seem to offer a favorable solution to an intractable problem.

## Medical Examinations and Licensure

### COMING EXAMINATIONS

#### STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 20-22. Sec., Dr. J. N. Baker, 517 Dexter Ave., Montgomery.

ALASKA: Juneau, Sept. 6. Sec., Dr. W. W. Council, Box 561, Juneau.

ARIZONA: *Basic Science*. Tucson, Sept. 20. Sec., Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson.

ARKANSAS: *Medical (Regular)*. Little Rock, Nov. 3-4. Sec., State Medical Board of the Arkansas Medical Society, Dr. L. J. Kosminsky, Texarkana. *Medical (Eclectic)*. Little Rock, Nov. 3. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock. *Basic Science*. Little Rock, Nov. 7. Sec., Mr. Louis E. Gebauer, 701 Main St., Little Rock.

CALIFORNIA: *Reciprocity*. San Francisco, Sept. 14, and Los Angeles, Nov. 16. *Written examination*. Sacramento, Oct. 17-20. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: Denver, Oct. 5-7. Sec., Dr. Harvey W. Snyder, 831 Republic Bldg., Denver.

CONNECTICUT: *Basic Science*. New Haven, Oct. 8. *Prerequisite to license examination*. Address State Board of Healing Arts, 1895 Yale Station, New Haven. *Medical (Regular)*. Hartford, Nov. 8-9. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Medical (Homoeopathic)*. Derby, Nov. 8-9. Sec., Dr. Joseph H. Evans, 1488 Chapel St., New Haven.

DELAWARE: Dover, July 11-13. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: *Basic Science*. Washington, Dec. 26-27. *Medical*. Washington, Jan. 9-10. Sec., Commission on Licensure, Dr. George C. Ruhland, 203 District Bldg., Washington.

FLORIDA: Jacksonville, Nov. 14-15. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, Oct. 11-12. Joint-Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

IDaho: Boise, Oct. 4-5. Commissioner of Law Enforcement, Hon. J. L. Balderston, 205 State House, Boise.

ILLINOIS: Chicago, Oct. 18-20. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.

IOWA: *Basic Science*. Des Moines, Oct. 11. Corres. Sec., Mr. H. W. Grefe, Capitol Bldg., Des Moines.

MAINE: Portland, Nov. 8-9. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Medical (Regular)*. Baltimore, Dec. 13-16. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Medical (Homoeopathic)*. Baltimore, Dec. 13-14. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, Nov. 8-10. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 413-F State House, Boston.

MICHIGAN: Lansing, Oct. 12-14. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-3-4 Hollister Bldg., Lansing.

MINNESOTA: *Basic Science*. Minneapolis, Oct. 4-5. Sec., Dr. J. M. ...rd Hall, University of Minnesota, Minneapolis.

MISSISSIPPI: *Reciprocity*. Jackson, December. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MONTANA: Helena, Oct. 4. Sec., Dr. S. A. Cooney, 216 Power Block, Helena.

NEBRASKA: *Basic Science*. Lincoln, Oct. 4-5. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEW HAMPSHIRE: Concord, Sept. 15-16. Sec., Board of Registration in Medicine, Dr. Fred E. Clow, State House, Concord.

NEW JERSEY: Trenton, Oct. 18-19. Sec., Dr. James J. McGuire, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, Oct. 10-11. Sec., Dr. Le Grand Ward, 135 Palace Ave., Santa Fe.

NEW YORK: Albany, Buffalo, New York, and Syracuse, Sept. 19-22. Chief, Bureau of Professional Examinations, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

NORTH CAROLINA: *Reciprocity*. December. Sec., Dr. William D. James, The Hamlet Hospital, Hamlet.

NORTH DAKOTA: Grand Forks, Jan. 3-6. Sec., Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.

OKLAHOMA: *Basic Science*. Oklahoma City, Nov. 30. Sec. of State, Hon. Frank C. Carter, State Capitol Bldg., Oklahoma City. *Medical*. Oklahoma City, Dec. 14. Sec., Dr. James D. Osborn Jr., Frederick.

OREGON: *Basic Science*. Portland, Nov. 19. Sec., State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.

PENNSYLVANIA: Philadelphia, January. Sec., Board of Medical Education and Licensure, Dr. James A. Newpher, 400 Education Bldg., Harrisburg.

PUERTO RICO: Santurce, Sept. 6-10. Sec., Dr. O. Costa Mandry, Box 3854, Santurce.

SOUTH CAROLINA: Columbia, Nov. 8. Sec., Dr. A. Earle Booser, 505 Saluda Ave., Columbia.

SOUTH DAKOTA: Pierre, Jan. 17-18. Director of Medical Licensure, Dr. B. A. Dyar, State Board of Health, Pierre.

VERMONT: Burlington, Feb. 14. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, Dec. 14-16. Sec., Dr. J. W. Preston, 30½ Franklin Road, Roanoke.

WEST VIRGINIA: Bluefield, Oct. 31-Nov. 2. Sec., Public Health Council, Dr. Arthur E. McClue, State Capitol, Charleston.

WISCONSIN: *Basic Science*. Madison, Sept. 24. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee. *Medical*. Madison, Jan. 10-14. Sec., Dr. Henry J. Gramling, 2203 S. Layton Bldg., Milwaukee.

WYOMING: Cheyenne, Oct. 3 (probable date). Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

#### NATIONAL BOARD OF MEDICAL EXAMINERS SPECIAL BOARDS

Examinations of the *National Board of Medical Examiners and Special Boards* were published in THE JOURNAL, August 13, page 647.

## Arkansas June Examination

Dr. L. J. Kosminsky, secretary, State Medical Board of the Arkansas Medical Society, reports the written examination held at Little Rock, June 9-10, 1938. The examination covered twelve subjects. An average of 75 per cent was required to pass. Seventy-one candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Arkansas School of Medicine.....(1937)	(1938) 79.2, 79.8, 80.1, 80.3, 80.5, 80.8, 81.1, 81.9, 82.1, 82.3, 82.4, 82.4, 82.4, 82.8, 82.8, 82.9, 83.1, 83.1, 83.2, 83.3, 83.3, 83.4, 83.5, 83.8, 83.8, 83.8, 84, 84.1, 84.1, 84.3, 84.3, 84.3, 84.4, 84.5, 84.7, 84.8, 84.8, 84.8, 85, 85, 85.1, 85.2, 85.3, 85.3, 85.4, 85.7, 85.8, 85.8, 85.8, 85.8, 85.8, 86.1, 86.3, 86.8, 87.1, 87.3, 87.3, 87.8, 88.4, 89.1, 89.2, 89.3, 90, 90.3, 91.3, 91.9	(1937)	85.3,
College of Physicians and Surgeons, Boston.....(1937)			87
Columbia University College of Physicians and Surgeons.(1935)			86.3

Ten physicians were licensed by reciprocity from January 12 through June 11. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Colorado School of Medicine....(1932), (1936)		(1932), (1936)	Colorado
Johns Hopkins University School of Medicine.....(1937)		(1937)	Maryland
Marion-Sims College of Medicine, Missouri.....(1896)		(1896)	Oklahoma
St. Louis University School of Medicine.....(1932)		(1932)	Missouri
Washington University School of Medicine.....(1934)		(1934)	Missouri
Jefferson Medical College of Philadelphia.....(1932)		(1932)	New Jersey
University of Tennessee College of Medicine.(1936, 2), (1937)		(1936, 2), (1937)	Tennessee

## Maryland (Homeopathic) June Examination

Dr. John A. Evans, secretary, Board of (Homeopathic) Medical Examiners, reports the written examination held at Baltimore, June 21-22, 1938. The examination covered nine subjects and included seventy questions. An average of 75 per cent was required to pass. Thirty-one candidates were examined, thirty of whom passed and one failed. The following school was represented:

School	PASSED	Year Grad.	Per Cent
Hahnemann Medical College and Hospital Philadelphia..(1937)	84, 85, 86, 88, 89, 90, 90, 92, 92, 92, 92, 93, 94, (1938) 80, 82, 83, 83, 83, 84, 84, 85, 85, 86, 86, 86, 86, 87, 87	(1937)	80, 83,
School	FAILED	Year Grad.	Per Cent
Hahnemann Medical College and Hospital of Philadelphia.(1937)			74

## Michigan Indorsement Report

Dr. J. Earl McIntyre, secretary, Michigan State Board of Registration in Medicine, reports fifty-eight physicians licensed by indorsement from Jan. 3 through July 27, 1938. The following schools were represented:

School	LICENSED BY INDORSEMENT	Year Grad.	Indorsement of
University of Arkansas School of Medicine.....(1935)		(1935)	Arkansas
University of Colorado School of Medicine (1933), (1937, 2)		(1933), (1937, 2)	Colorado
Emory University School of Medicine.....(1934), (1937)		(1934), (1937)	Georgia
Loyola University School of Medicine.....(1936)		(1936)	Illinois
Northwestern University Medical School.....(1929)		(1929)	Iowa
(1930), (1935), (1936) Illinois, (1937) Ohio			
Rush Medical College.....(1902) Wisconsin, (1933)		(1902) Wisconsin, (1933)	Iowa
University of Illinois College of Medicine.....(1935), (1937, 2)		(1935), (1937, 2)	Illinois
State University of Iowa College of Medicine.....(1929)		(1929)	Iowa
University of Louisville School of Medicine.....(1934), (1936)		(1934), (1936)	Kentucky
Johns Hopkins University School of Medicine.....(1935)		(1935)	Maryland
University of Minnesota Medical School.....(1934)N. B. M. Ex.		(1934)N. B. M. Ex.	Illinois
Marion-Sims College of Medicine, Missouri.....(1893)		(1893)	Illinois
St. Louis University School of Medicine.....(1926)		(1926)	Ohio
Washington University School of Medicine.....(1935), (1936)		(1935), (1936)	Missouri
Creighton University School of Medicine.....(1933)		(1933)	Kansas
Univ. of Nebraska College of Med. (1934), (1936), (1937, 2)		(1934), (1936), (1937, 2)	Nebraska
Cornell University Medical College.....(1935)		(1935)	New York
University of Buffalo School of Medicine.....(1934)		(1934)	New York
Ohio State Univ. College of Medicine (1935, 2), (1936, 2)		(1935, 2), (1936, 2)	Ohio
University of Cincinnati College of Medicine.....(1924)W. Virginia,		(1924)W. Virginia,	Ohio
(1934), (1936) Ohio			Ohio
Western Reserve Univ. School of Medicine (1935, 2) (1937, 3)		(1935, 2) (1937, 3)	Penna.
University of Pennsylvania School of Medicine.....(1935)		(1935)	Tennessee
Meharry Medical College.....(1934)		(1934)	Tennessee
University of Tennessee College of Medicine.....(1937)		(1937)	Tennessee
Vanderbilt University School of Medicine.....(1912)		(1912)	Texas
Baylor University College of Medicine.....(1936), (1937)		(1936), (1937)	Texas
University of Texas School of Medicine.....(1937, 2)		(1937, 2)	Texas
Medical College of Virginia.....(1937)		(1937)	Virginia
Marquette University .....			Wisconsin
University of Wisconsin .....			Wisconsin
University of Toronto .....			Indiana
Schlesische-Friedrich .....			Illinois
Fakultät, Breslau .....		(1927)	Illinois

## Book Notices

**Malaria In Europe: An Ecological Study.** By L. W. Hackett, M.D., Dr.P.H., Assistant Director, International Health Division, Rockefeller Foundation. University of London, Heath Clark Lectures, 1934, Delivered at the London School of Hygiene and Tropical Medicine. Cloth, Price, \$3.75. Pp. 336, with 60 illustrations. New York & London: Oxford University Press, 1937.

This book is based on the Heath Clark lectures given at the London School of Tropical Medicine in 1934. It is the outgrowth of the work of the Malaria Experiment Station at Rome, now the Laboratory of Malaria Studies under the direction of Professor Missiroli of the new Italian Institute of Public Health. The author is assistant director of the International Health Division of the Rockefeller Foundation, which founded the Malaria Station in Rome in 1925 and carried on investigations on malaria in the Roman Campagna and at other centers in Greece, Bulgaria and Spain. Cooperation with other malariologists, especially Professor Martini at Hamburg and Professor Swellengrebel at Amsterdam, was utilized in the solution of problems of malaria and anophelism in the countries of northern Europe where anophelism both with and without malaria presented perplexing local and seasonal problems.

As the title indicates, the book is an ecologic study involving the interrelations of three interdependent groups of organisms, man, a series of related mosquitoes, and several species of Plasmodium, and these, moreover, in relation to man's domesticated animals. In its biologic aspects it is a superb demonstration of the specificities, complexities and deviations of the mutual adaptations which arise and become diversified in connection with the establishment of parasites in civilized social man. Its consequences ramify into human history as a factor in the decline of the civilizations of Greece and Rome or into human sociology when the absentee land owners of the large farms of the Roman Campagna were charged with creating conditions favoring malaria among the peasant population. It is admitted that famine and poverty affect the clinical manifestations of malaria and that improved economic conditions mitigate them, but the most prosperous communities suffer terribly at times. Social and economic uplift are no substitute for laborious antilarval campaigns and meticulous mosquito-proofing of houses.

The solution of the perplexing problem of anophelism without malaria in many European areas was solved when it was discovered that *Anopheles maculipennis*, the European vector of malaria, instead of being a single species in reality included no less than six distinct types, with constant characteristics such as egg markings, sexual behavior, breeding habits and zoophilic preferences. Two of the six preferred human blood, three fed by preference on cattle, and one on both. These preferences were determined by precipitin tests on the last blood meal of thousands of mosquitoes. Most of the zoophilic mosquitoes, even when captured in houses, were found to have fed on cattle. The part that the domestic animals of man play in the complicated picture of the distribution of mosquitoes and the incidence of malaria is a very important one.

Public health measures for the reduction of malarial mosquitoes seem to have swung away from drainage made popular by the successes of the engineers in the Canal Zone and to have turned more toward dusting the breeding waters of *Anopheles* by airplane with paris green and especially in recent years to the introduction of the top minnow, *Gambusia*, which feeds on the mosquito larvae but is seriously hampered by matted vegetation and running water and has seasonal limitations. An intimate knowledge of the habits and distribution of all local mosquitoes is essential to the economical and effective use of all methods of mosquito control. Truly the path of the public health officer charged with the obligation of reducing malaria is neither wide nor straight but devious and full of pitfalls. It requires an adaptation to local circumstances and an opportunism beyond that required by any other major disease of man. This arises from the fact that the mosquito lives in two habitats, the water and the air, in which it can infest large areas and all abodes of man.

The use of quinine in the treatment of malaria has had a vogue of 300 years but there is still no uniformity as to the

mode of treatment and still less agreement as to its action and efficiency. The use of malaria in the treatment of dementia paralytica has proved that quinine does not kill sporozoites injected by the mosquito and so cannot prevent an infection. Some clinical reaction on the part of the infected host seems to be necessary to render it effective, possibly in the activation of an immune mechanism. Neither can quinine sterilize the sexual forms, at least of *Plasmodium falciparum*. No intensification of treatment will result in the radical cure of more than a certain percentage of infected persons. It seems even to check growing immunity in some cases.

The new synthetic atabrine and plasmochin have promise of replacing quinine. The former has none of the ill effects known as cinchonism and seems to be followed by fewer relapses but may cause mental derangement. Plasmochin in minute quantities sterilizes the sexual forms of all species of *Plasmodium* in the blood and therefore is of great importance in eliminating these sources of the infection of mosquitoes in the human population in malarial districts, but it has no prophylactic value and its therapeutic utility is contested.

This book cannot be reviewed adequately. It is a mine of detailed information in an immense field of recent research of great importance in the prevention and control of malaria and of medical practice in malarial regions. As a biologic document in the new and important field of animal ecology it is unsurpassed as a revelation of the intricate interrelations of organisms associated in the complex of parasitism. It is a book to be read, reread and read again as a superb piece of constructive, scientific medicine. Its greatest service to the medical profession and to the public interested in the sound progress of public health measures lies in its lucid and complete demonstration of the complicated nature of at least this one problem of public health. Its solution requires adequately trained technical personnel and their cooperation over a large area and for a long time, but its results bid fair to be of lasting value.

*Introduction à la chirurgie digestive.* Par E. E. Lauwers. Préface du P<sup>r</sup> P. Duval. Paper. Price, 38 francs. Pp. 223. Paris: Masson & Cie, 1937.

This essay is one of the links in a chain of five introductions by the same author to various fields of surgery, the others being introduction to surgery of the nervous system, reconstructive, thoracic and genito-urinary surgery; it brings before the eyes of the reader the general problems of this special field by making excursions into the realms of diagnosis, therapeutics and technic. The noted surgeon Pierre Duval states in the preface that three periods may be distinguished in the surgery of the digestive tract: During the first an immediate success was the main goal of the surgeon; to attain it, more and more audacious procedures were devised. The second period was characterized by improvements in the technic for the purpose of restitution of anatomic perfection. During the present, or third period, attempts are being made to combine the anatomic with functional perfection; to accomplish this and to avoid so-called operative malady caused by anatomic mutilations, a profound knowledge of normal anatomy, normal and pathologic physiology, organic chemistry, and general and organic biology is necessary. These fundamental informations, necessary for a comprehension of the surgical pathology of the digestive tract and for judicious surgery, form the base of this work. After a brief review of embryonal development of the abdominal organs the author describes malformations of the peritoneum and intestinal canal and touches on the physiology of this region. Surgical anatomy of hernias and clinical and laboratory diagnostic methods form the subject of the following chapters. Others deal with peritonitis, traumas of the abdominal region, ileus, peptic ulcers, diverticula and other important surgical conditions of the gastrointestinal tract. The closing chapters treat of surgery of the liver, biliary tract, pancreas and spleen. With admirable erudition the author picked up the high points of physiology, surgical anatomy, diagnosis and treatment of the most important pathologic conditions; he may be congratulated on his masterful, concise presentation of the subject. The book deserves translation into English to make it more accessible to the American surgeon who does not read French.

*Illness: Its Story and Some Common Symptoms. A Guide for the Layman.* By S. Henning Belfrage, M.D. Cloth. Price, \$1.50. Pp. 175. New York & London: Oxford University Press, 1938.

This little volume, measuring 4 by 6 inches and less than five-eighths inch in thickness exclusive of the covers, is an effort to condense too much into too little space. Four pages is devoted to a foreword, five pages to "The Attainment of Health," three pages to "The Meaning of Symptoms," eight pages to "The Causes of Disease" and eleven pages to "The Nature of Disease." Merely to list the headings and the amount of space devoted to their discussion is to expose the inadequacy of this section of the book. In part two are listed "Some Common Symptoms. Their Origin, Significance, and First-Aid Treatment." Each of these symptoms is treated in a brief paragraph which is superficial and in many instances inaccurate. While the book contains much useful information, it usually falls far short of adequate treatment, even of symptoms. Fundamentally the whole idea of giving lay persons a list of symptoms and advice as to what to do about them is unsound. Such information as that contained under the heading of "Back Ache" is distinctly false. For example, "The attack tends to pass off with rest, the application of heat to the inflamed muscle, deep massage and mild purge, and five to ten grains of aspirin repeated every four to six hours if pain is severe." The book cannot be recommended.

*Probleme der Biologie.* Herausgegeben von Erich Ries und Karl Wetzel. Band I: Hormone bei wirbellosen Tieren. Von Gottfried Koller, a. o. Professor der Universität Kiel z. Zt. Ordinarius für Zoologie an der Staatlichen Tung Chi-Universität in Shanghai-Woosung. Cloth. Price, 10.80 marks. Pp. 143, with 27 illustrations. Leipzig: Akademische Verlagsgesellschaft m. b. H., 1938.

This volume is well written and adequately illustrates work on the physiology of the hormones of certain invertebrate animals. The author has condensed his study of these hormones into four primary divisions. One section is devoted to a consideration of cellular hormones: those elaborated by a cell and effective within the same unicellular organism. In another section are considered hormones of aglandular tissue, wherein the heart-stimulating regulators and neural hormones are discussed. A third section is devoted to the glandular hormones, such as sex hormones, hormones regulating metamorphosis and those controlling changes of color of the integument. A concluding section of the volume covers the literature relative to the effect of mammalian hormones on certain representative animals of the invertebrate phyla. The effects of the administration of hormones of the thyroid, pituitary and adrenal glands are discussed. An extensive bibliography is appended. This volume represents a distinct contribution to knowledge of endocrinology of invertebrates but clearly is not of practical significance to the busy physician in diagnosing disarrangements in the function of the endocrine system in man.

*The Measurement of Outcomes of Physical Education for College Women.* By Elizabeth Graybeal, Director of Physical Education for Women, State Teachers College, Duluth, Minnesota. Paper. Price, \$1. Pp. 80, with 9 illustrations. Minneapolis: University of Minnesota Press, 1937.

This is an extensive and detailed report of studies at the University of Minnesota of the outcome of physical education for women. An effort is made to express gain or loss in attitudes, knowledge, motor ability and posture on a percentage basis down to the second decimal place. Differentiation is made between groups with little activity and groups with much activity. The conclusion is arrived at that gains in attitude, knowledge, motor ability and posture attributable to supervised activity in physical education are in excess of gains attributable to unsupervised activity. Motor ability tests known as the Minnesota Graybeal tests are described and tests of them are published. Measurements of growth in physical education are made, including gains in information or knowledge, in which a gain of 68 per cent was made by the experimental group and only 9.4 per cent by the control group. In motor ability the experimental group gained 7 per cent while the control group gained 10 per cent. In posture the experimental group gained 25 per cent while the control group gained 23 per cent, indicating, of course, no appreciable difference. The study should be of great interest to physical educators. To the medical reviewer it looks very much as if the summary and conclusions, so laboriously arrived



at, could have been pretty much predicted on the basis of general information and experience. The expression of percentages to the second decimal place in measuring such variable and subjective qualities as attitudes, knowledge, motor ability and posture gives a fictitious appearance of accuracy.

*Sepsis nach Angina.* Von Prof. Dr. W. Uffenorde und Prof. Dr. H. Claus. Heft 1, Hals-, Nasen- und Ohrenheilkunde, zwanglose Schriftenschrift. Herausgegeben von Prof. Dr. H. Loebell und Prof. Dr. W. Tonnendorf. Second edition. Paper. Price, 4.50 marks. Pp. 37, with one illustration. Leipzig: Curt Kabitzsch, 1938.

As early as 1920 Moshir in this country called the attention of physicians to the septicemia which follows acute pharyngeal infections and which is due often to involvement of the jugular vein, secondary usually in his experience to deep cervical collections of pus. Some years later in Austria and Germany this topic aroused great interest. In Berlin a special pavilion was established in recognition of the fact that many obscure cases of septicemia arose from tonsillar infections. These, moreover, may have been mild and present some weeks before. The relationship between the severe present illness and the perhaps forgotten tonsillitis of sometime before was often not recognized. There remains considerable controversy as to the origin of septicemias from tonsillar infections. These are brought about, it is agreed, in more than one way. Rapidly fatal forms occur, usually by direct invasion of the blood stream by way of the retrotonsillar veins and without thrombophlebitic changes. More often thrombophlebitis of the retrotonsillar veins is present with possible extension as far as the internal jugular vein. Less directly, the veins may be attacked by inflammations involving lymph nodes in close contact with them or by being bathed in the pus of phlegmons arising in the interfascial spaces of the neck. These arise by direct extension from peritonsillar abscesses or secondarily by way of lymphadenitis and thrombophlebitic processes. Therapy consists of removal of the involved tonsils, drainage of cervical abscesses and ligation of the thrombosed jugular vein; in addition, use of sulfanilamide and blood transfusions are considered useful. Most of these things the authors stress. They are pioneers in investigations of this type of disease and they have added greatly to its recognition and proper therapy. The specialist and general practitioner need to be aware of the information this work brings, to the end that many needless deaths from obscure sepsis may be prevented.

*Archiv und Atlas der normalen und pathologischen Anatomie in typischen Röntgenbildern. Methodik der Röntgenuntersuchung des Kehlkopfes.* Von Dr. Richard Waldapfel, Assistent der Ohren-, Nasen-, Halsabteilung der allgemeinen Poliklinik in Wien. Fortschritte auf dem Gebiete der Röntgenstrahlen, Ergänzungsband LIII. Herausgeber: Prof. Grashy. Paper. Price, 17.60 marks. Pp. 91, with 77 illustrations. Leipzig: Georg Thieme, 1938.

The first attempts to examine the larynx roentgenologically were made at the beginning of this century. First the position of the vocal cords was studied by Scheier. Later on Thost presented the diseases of the larynx and its neighboring organs in a special atlas. The new textbook of Waldapfel deals with the same area taken from the rich material of the Clinic Hajek, Vienna. In addition to the transverse and anteroposterior exposure Waldapfel makes use of the placement of a film in the retropharyngeal space. A film specially cut is introduced into the retropharyngeal space as far as the beginning of the esophagus after anesthetization of the posterior wall of the retropharynx and is held by a forceps. Exposure is taken by the experiment of Valsalva to increase the contrast between the air and the soft tissues. Furthermore, the examination of Fonnson is recommended. The larynx is moved forward. By means of air inflation in the retropharyngeal space it is possible to visualize the retrolaryngeal and hypopharyngeal space also and to discover the involvements in the posterior portions of the larynx in their full extent. The author points out the objects of x-ray examination of the larynx as follows: outlines and extent of laryngeal processes; narrowing of the air space; size and extent of stenosis; extent of involvements in front and behind the larynx, and thickening and destruction of cartilaginous parts of the larynx. Numerous instructive roentgenograms and sketches with interpretations make the results of examination understandable to every laryngologist. Here we are dealing with a supplementary examination; all the other clinical examinations have to be done in advance.

*A Text-Book of Pharmaceutics.* By Arthur Owen Beniley, Reader in Pharmaceutics and Head of the School of Pharmacy in the University College of Nottingham, and others. Fourth edition. Cloth. Price, \$5. Pp. 1,001, with 234 illustrations. Baltimore: William Wood & Company, 1937.

This is a book on the practice of pharmacy in accordance with the Addendum (1936) to the British Pharmacopoeia and the British Pharmaceutical Codex of 1934; and it incorporates, as the author states, the recent advances in pharmaceutical education as is evidenced by such chapters as the ones on osmotic pressure, isotonic solutions, electrolysis and hydrogen ion concentration, absorption, viscosity determinations, the colloidal state, and the theory of emulsions. The first part of the book discusses the political history of pharmacy in Great Britain. Part 2 takes up general principles and apparatus; part 3, dispensing; part 4, pharmaceutical preparations. In part 5, under the heading of pharmaceutical biology, are taken up the matters of bacteriology, sterilization, preparation of solutions for parenteral administration, vaccines and serums. Part 6 discusses briefly the principle of biologic assay of pharmaceutical preparations. There are a good many items in this book that might with advantage be incorporated in the current pharmaceutical education in this country; and for this reason the book is recommended to pharmaceutical libraries, teachers of pharmacy and practicing pharmacists who wish to keep abreast with the trend of pharmaceutical progress in the British Empire.

*Father's Doing Nicely: The Expectant Father's Handbook.* By David Victor. With a foreword by George W. Kosmak, M.D. Cloth. Price, \$1.50. Pp. 170, with illustrations by Tom Torre Bevens. Indianapolis & New York: Bobbs-Merrill Company, 1938.

The glory of motherhood and the role of the mother in child-bearing have been rightfully extolled. The role of the father, however, has received but scant attention. The problems of reproduction must be shared by both mother and father. Although many books have been written about motherhood, this small book presents the problems of the father. The birth of a baby in the average American household is still the most important and exciting event in the lifetime of that household. It calls for tremendous physical, environmental and economic adjustment. The peace and welfare of a family may be seriously jeopardized. Failure of adjustment to the new situation may result in irreparable damage to the family. Any information which helps to make this transition easier and more natural renders a distinct service. The author discusses the many problems involved in the birth of a baby in an amusing and yet instructive manner. Thus, the father is gently led over such hurdles as the economics of childbearing, the trials and tribulations of labor, and the environmental adjustment in the home. The father is made to feel that he is a true partner in the present and future of the new heir or heiress. The book can be heartily recommended to expectant fathers.

*La maladie de Lobstein: Le syndrome des sclérotiques bleues dans ses rapports avec la fragilité osseuse et l'hérédosyphilis.* Par Georges Carrière, professeur de clinique médicale, Claude Huriez, professeur agrégé à la Faculté de médecine de l'Université de Lille, et William Hocq. Paper. Pp. 163, with 29 illustrations. Paris: G. Doin & Cie, 1938.

This is a monograph on the syndrome of blue sclerotics with osteopsathyrosis, or fragilitas ossium, called Lobstein's disease after Lobstein's report in 1933. The authors divide the ocular syndrome with blue sclerotics into (1) the osseous syndrome with psathyrotic deformities and developmental changes of bone; (2) the auricular syndrome, namely deafness; (3) the articular syndrome, and (4) the endocrine syndrome. The most constant observations are the blue sclerotics, which are of diagnostic significance if they are familial and associated with auditory symptoms. The authors distinguish between complete and incomplete forms of Lobstein's disease. In discussing the osseous symptoms they mention also the vertical form of osteopsathyrosis. The craniofacial deformations are particularly frequent; the occluding temporal and frontal bones, the smallness of the face and the skull, the thinning of the cranial wall. The articular syndrome is merely excessive relaxation of the joints, which is inconstant. The auricular syndrome is particularly otosclerosis. Much space is devoted to the endocrine aspects. The authors mention various deficiencies but particularly the

dysfunction of the parathyroids. They point to the frequent finding of hypocalcemia and regard it rational to consider the removal of the parathyroid. This was done in two patients; while it is too early to report definitely, there have been no successive fractures, the calcemia being at normal level. The authors state that in the great majority of cases the disease, which is hereditary or familial, shows hereditary stigmas such as high infant mortality, frequency of osseous malformation and dental changes of hereditary aspect, frequent polyglandular syndromes, and finally the articular and auricular symptoms which are, according to the authors, similar to those of tabes. While it must be admitted that the pathogenic background of this disease is little documented, the book is to be recommended as a scientific and thorough treatise on this disease.

**Ophthalmoskopische Studien in monochromatischem, sukzessiv veränderlichem Licht. I. Der normale Augenhintergrund.** Von Ingemar Kugelberg, Med. Lic. Inauguraldissertation welche mit gehöriger Genehmigung der weiterführenden medizinischen Fakultät zu Uppsala verteidigt wird. Paper. Pp. 183, with 7 illustrations. Uppsala: Almqvist & Wiksells, 1937.

Kugelberg has exhausted the study of the possible investigative methods with the instrument available in a review of the conditions found in the normal fundus with monochromatic light. His monochromatic apparatus consists of an Abbe prism of constant diversion which outlines a spectrum by means of the illuminous slit from an arc light which is intersected by a second slit providing a desired wavelength. By turning the prism one obtains successive wavelengths, which on account of the fluctuating dispersion and intensity may be corrected by the change in size of the slit. The apparatus is checked for measurement of wavelength by means of a linear spectrum and thereby the consistency of the monochromatic nature of the wave is assured. The pamphlet is divided into ten chapters, on (1) introductory matter and survey, (2) method, (3) survey of the normal background of the eye in monochromatic light, (4) the retinal arteries, (5) the retinal veins, (6) the choroidal vessels, (7) the reflex of the retinal vessels, (8) the diffusion of light in the choroid, (9) the reflection on the internal limiting membrane and the striped structures of the nerve fiber layers, and (10) the question of the macula. A good summary of the work is incorporated in the final six pages of the pamphlet. Pertinent references fill another six pages. The material constitutes a comprehensive review and experimental insight into this limited field of endeavor. The author intends to continue with an anatomicohistologic study to verify his results.

**Pharmaceutical Therapeutics with Pharmacology, Posology and Toxicology.** By Eldin V. Lynn, Ph.D., Professor of Chemistry, Massachusetts College of Pharmacy, Boston. Second edition. Cloth. Price, \$1. Pp. 430. New York & London: McGraw-Hill Book Company, Inc., 1938.

The object of this book is to present for students and practitioners of pharmacy the essential facts of pharmacology, toxicology and therapeutics of all drugs appearing in the United States Pharmacopeia, the National Formulary and New and Nonofficial Remedies (unfortunately abbreviated throughout as N. R. instead of N. N. R.); a few drugs not appearing in any of these publications are also included. The task is accomplished most admirably, and it would seem that in its new edition this work would be practically indispensable to the pharmacist studiously interested in the practice of his venerable and important profession.

**Die endokrinen Erkrankungen: Ihre Klinik, Pathologie und Therapie.** Von Prof. Dr. N. v. Jaglé, Vorstand der zweiten medizinischen Universitätsklinik, Wien, und Doz. Dr. K. Fellinger, Vorstand der Intern. u. Stoffw.-Abt. am Krankenhaus der Stadt Wien. Paper. Price, 9 marks. Pp. 293, with 37 illustrations. Berlin & Vienna: Urban & Schwarzenberg, 1938.

This book is intended to aid the physician in finding his way through the maze of endocrine diagnosis and in separating the valuable from the worthless endocrine remedies. The authors present a fairly critical summary of endocrine diseases; but the glandular preparations recommended, or suggested for trial, include many of dubious potency and a few for which there is no excuse. Even though no great enthusiasm is shown for these products, they would better have been omitted or properly classified.

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Taxes: Liability of Optometrist for Retailers' Occupation Tax.**—The Illinois Retailers' Occupation Tax Act imposes a tax on the seller of tangible personal property at retail. The State Department of Finance promulgated a rule under the act to the effect that "if optometrists or oculists also act as opticians, or sell spectacles, eyeglasses, lenses, frames, or other tangible personal property to users or consumers, they incur liability for tax with respect to receipts from such sales." The plaintiffs, optometrists, instituted a suit to restrain the collection of the tax sought to be imposed on them. The trial court entered a decree for the defendants; the Director of Finance and the Attorney General, and the plaintiffs appealed to the Supreme Court of Illinois.

The sole question before the court was whether the fact that in the carrying on of the practice of optometry the person receiving the service, if called on to purchase eyeglasses, frames or other tangibles from the optometrist, participated in a sale of tangibles which is taxable under the Retailers' Occupation Tax Act. If, said the court, it becomes necessary for a physician to furnish medicine or surgical dressings in effecting a cure, he certainly does not thereby come within the designation of those engaged in a calling which would result in the imposition of a retail tax. The same reasoning applies to dentists even though that calling requires the furnishing of certain inlays, fills or crowns, or even false teeth, if necessary to a completion of the dental service. The exemption of these two professions from the operation of the act was recognized by a special rule promulgated by the Department of Finance. The main object and purpose of optometry, in the opinion of the court, is to furnish service to one requiring a correction of vision. It is not a craft or a trade, but a personal professional calling in which a reputation is built up because of the efficiency of the service rendered. The requirements of the optometry practice act insist on a good moral character on the part of an applicant for a license, graduation from an approved school of optometry, and the passing of satisfactory examinations and tests as to educational fitness. Not one of these requisites is necessary for one engaged in the business of the retail sales of tangibles.

In the opinion of the court the legislature, in providing for the licensing of optometrists, created a calling distinct in its character from that of the retailer who sells similar tangibles in the pursuit of a trade, and the optometrist engaged solely in his professional occupation is not subject to the tax. The decree of the trial court was therefore reversed and the case remanded with directions.—*Babcock v. Nudelman (Ill.)*, 12 N. E. (2d) 635.

**Compensation of Physicians: Liability of Father for Medical Services Rendered to Adult Son.**—The defendant's adult son was critically injured and was immediately taken to a hospital. The defendant hurried to the hospital and after considering the advisability of obtaining the services of two other physicians he finally authorized the chief surgeon of the hospital to operate on the son, telling him to do all that he could for the patient and to spare no expense. On being told that a special night nurse was needed, the father authorized the surgeon to get one and reiterated the statement to spare no expense. A day nurse was employed, as was also a physician to assist in the operation. Thereafter the father refused to pay the expense incurred in the treatment of his son, and the hospital, the chief surgeon, the assistant physician and the two nurses instituted separate actions against the father. By agreement, the cases were tried together. The trial court gave judgment in each case against the defendant, who thereupon appealed to the Supreme Court of South Carolina, denying liability on the ground that he had made no contract to pay for the services.

As a rule, said the Supreme Court, a request by a parent to a physician to attend an adult child does not create an implied

contract on the part of the parent to pay for the services rendered by the physician. This rule, however, is not of invariable application, for the conditions and circumstances surrounding the parties at the time the request is made, as well as the utterances on the subject, must be taken into consideration. If, under the facts and circumstances, the physician is justified in believing and relying on the parents' intention to pay for the services rendered, although there is no express promise to pay therefor, an implied contract to pay is created. If there is nothing in the facts and circumstances suggesting to the physician that the parent intends to assume the legal obligation to pay, at the time the request for services is made, the parent is no more legally liable for services rendered to his adult child, living away from his home, than he would be for services requested to be rendered to a total stranger. There was no express contract in the present case but the court was of the opinion that the surrounding circumstances were such as to create an implied contract. When the father arrived at the hospital, he was advised that he could employ any surgeon he preferred to perform the necessary surgical operation. The father selected the chief surgeon, telling him to do everything possible for his wounded son and to spare no expense. If the statement made by the defendant had related to a stranger or a mere acquaintance, no liability would have been established. But here, the court pointed out, a father, on being advised of his wounded son's condition, came a long distance after night, and on finding his own flesh and blood in a critical condition, asked about other physicians and then, after conferring with other persons present, authorized the chief surgeon to proceed with the operation and to spare no expense. Such evidence, the court said, was sufficient to justify the trial court in submitting the issue to the jury as to whether or not an implied contract existed.

The defendant further contended that he was not liable for the services rendered by the day nurse, because the agency of the chief surgeon to employ her was proved only by his statements, which were insufficient to establish the agency. While it is true, the court said, that the declarations of an agent alone as to his agency are insufficient to prove the agency, it is also well established that if there are other corroborating facts and circumstances disclosed by the testimony, the existence of the agency then becomes a question for the jury. The court could find no error in the submission of this question to the jury.

The judgments in favor of the individual plaintiffs were affirmed.—*Broadway v. Jeffers, and four other cases (S. C.)*, 194 S. E. 642.

#### Workmen's Compensation Acts: Employer's Liability for Expense of Hospitalization Beyond Statutory Limits.

—The defendant company sent one of its injured employees to the plaintiff hospital for treatment. The services rendered by the hospital extended from July 25, 1931, to June 18, 1932. Apparently, the hospital entered the charge for the services against the employer's insurer and from time to time sent bills to the insurer but received no payment. Eventually the insurer went into bankruptcy, and the hospital thereafter sought to collect from the defendant company. Finally suit was instituted and the trial court gave judgment for the hospital. The defendant company appealed to the Supreme Court of Wisconsin, contending, among other things, that it was not liable because of the fact that the hospital did not extend credit to it but to the insurer.

Liability for the expenses incident to hospitalization, the court said, does not depend on to whom credit was extended but on who in law was responsible for the payment of the bill. The employee himself was doubtless responsible for payment. The defendant company was also responsible for its payment because the workmen's compensation act made it responsible. The insurance company was also responsible for its payment because of its policy of indemnity to the defendant. That the hospital and the defendant company both considered the case as a compensation case was plain. This being so, the defendant was in effect a surety for the employee, and the insurance company was a surety for the defendant and therefore for the employee. The liability of the defendant was not affected, the court said, because it procured indemnity insurance or because the plaintiff sought payment from the defendant's surety and failed to recover

because of the surety company's bankruptcy. Where the relation of principal and surety exists, efforts to collect from a surety that fail do not relieve the principal.

The defendant further contended that, even if it was under contractual obligation to pay for the employee's hospitalization, its obligation was limited under the workmen's compensation act to hospitalization for ninety days. The act, however, the court pointed out, does not limit the obligation to ninety days but provides for liability beyond that period if in the opinion of the industrial commission further hospitalization will tend to lessen the period of compensable disability. The liability of the defendant for the expenses incident to hospitalization continued until such time as it was terminated by objection by the defendant to further hospitalization at its expense. No such objection was interposed in the present case. Liability would extend for at least a reasonable time, and there was no contention that hospitalization was unreasonably extended or unreasonably furnished in this case. The court was of the opinion therefore that, in absence of any objection by the defendant to hospitalization furnished, the defendant was properly adjudged liable for the amount allowed by the trial court.

The judgment of the trial court for the hospital was therefore affirmed.—*St. Mary's Hospital & Training School for Nurses of Sisters of Misericordia v. Atlas Warehouse and Cold Storage Co. (Wis.)*, 277 N. W. 144.

## Society Proceedings

### COMING MEETINGS

- American Academy of Ophthalmology and Oto-Laryngology, Washington, D. C., Oct. 9-14. Dr. William P. Wherry, 107 South 17th St., Omaha, Executive Secretary.
- American Association for the Study of Goiter, Washington, D. C., Sept. 12-14. Dr. W. Blair Mosser, 133 Biddle St., Kane, Pa., Secretary.
- American Association for the Study of Neoplastic Diseases, Washington, D. C., Sept. 8-10. Dr. Eugene R. Whitmore, 2139 Wyoming Ave. N.W., Washington, D. C., Secretary.
- American Association of Obstetricians, Gynecologists and Abdominal Surgeons, White Sulphur Springs, W. Va., Sept. 22-24. Dr. James R. Bloss, 418 Eleventh St., Huntington, W. Va., Secretary.
- American Association of Railway Surgeons, Chicago, Sept. 19-21. Dr. Daniel B. Moss, 547 W. Jackson Blvd., Chicago, Secretary.
- American Congress of Physical Therapy, Chicago, Sept. 12-15. Dr. Richard Kovacs, 1100 Park Ave., New York, Secretary.
- American Hospital Association, Dallas, Texas, Sept. 26-30. Dr. Bert W. Caldwell, 18 East Division St., Chicago, Executive Secretary.
- American Roentgen Ray Society, Atlantic City, N. J., Sept. 20-23. Dr. Carleton B. Peirce, University Hospital, Ann Arbor, Mich., Secretary.
- Association of Military Surgeons of the United States, Rochester, Minn., Oct. 13-15. Dr. H. L. Gilchrist, Army Medical Museum, Washington, D. C., Secretary.
- Central Association of Obstetricians and Gynecologists, Minneapolis, Oct. 6-8. Dr. William F. Mengert, University Hospitals, Iowa City, Secretary.
- Clinical Orthopedic Society, Nashville, Tenn., and Birmingham, Ala., Oct. 7-8. Dr. H. Earle Conwell, 215 Medical Arts Bldg., Birmingham, Ala., Secretary.
- Colorado State Medical Society, Estes Park, Sept. 7-10. Mr. Harvey T. Sethman, 537 Republic Bldg., Denver, Executive Secretary.
- Delaware Medical Society of Dover, Oct. 10-12. Dr. Allan V. Gilliland, Smyrna, Secretary.
- Idaho State Medical Association, Sun Valley, Sept. 6-10. Dr. Harold W. Stone, 105 North Eighth St., Boise, Secretary.
- Indiana State Medical Association, Indianapolis, Oct. 4-6. Mr. Thomas A. Hendricks, 23 East Ohio St., Indianapolis, Executive Secretary.
- Kentucky State Medical Association, Louisville, Oct. 3-6. Dr. Arthur T. McCormack, 620 South Third St., Louisville, Secretary.
- Michigan State Medical Society, Detroit, Sept. 19-22. Dr. L. Fernald Foster, 311 Center Ave., Bay City, Secretary.
- Mississippi Valley Medical Society, Hannibal, Mo., Sept. 28-30. Dr. Harold Swanberg, 510 Main St., Quincy, Ill., Secretary.
- Nevada State Medical Association, Reno, Sept. 23-24. Dr. Horace J. Brown, 120 N. Virginia St., Reno, Secretary.
- Northern Minnesota Medical Association, Crookston, Aug. 29-30. Dr. J. F. Norman, Crookston, Secretary.
- Oregon State Medical Society, Timberline Lodge, Aug. 24-27. Dr. Morris L. Bridgeman, 1020 S.W. Taylor St., Portland, Secretary.
- Pacific Association of Railway Surgeons, Los Angeles, Oct. 7-8. Dr. W. T. Cummins, Southern Pacific General Hospital, San Francisco, Secretary.
- Pennsylvania Medical Society of the State of Scranton, Oct. 3-6. Dr. Pennysldon, 500 Penn Ave., Pittsburgh, Secretary.
- Walter F. Donaldson, 500 Penn Ave., Pittsburgh, Secretary.
- Society of American Bacteriologists, San Francisco, Aug. 30-Sept. 1. Dr. L. L. Baldwin, College of Agriculture, University of Wisconsin, Madison, Wis., Secretary.
- Utah State Medical Association, Ogden, Sept. 1-3. Dr. D. G. Edmunds, 610 McIntyre Bldg., Salt Lake City, Secretary.
- Vermont State Medical Society, Burlington, Oct. 6-7. Dr. B. F. Cook, 154 Bellevue Ave., Rutland, Secretary.
- Virginia Medical Society of Danville, Oct. 4-6. Miss Agnes V. Edwards, 1200 East Clay St., Richmond, Secretary.
- Washington State Medical Association, Bellingham, Aug. 29-31. Dr. V. W. Spickard, 1303 Fourth Ave., Seattle, Secretary.
- Wisconsin State Medical Society of Milwaukee, Sept. 13-16. Mr. J. G. Crownhart, 119 East Washington Ave., Madison, Secretary.

# Current Medical Literature

## AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1928 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

### American J. Digestive Diseases, Huntington, Ind.

5: 281-344 (July) 1938

- Comparison of Streptococci from the Colon with Bagen's Organism. J. F. Kessel, Los Angeles.—p. 281.
- IV. Experimental Study of Hydrogen Ion Concentration and Chemistry of Bile, Its Effect on Stones and a Suggestion as to Therapeutic Application of Ox Bile in Gallbladder Disease. S. Morrison, M. Feldman, J. C. Krantz Jr. and Frances F. Beck, Baltimore.—p. 288.
- Effect of Estrogenic Hormone on Gastric Acidity. L. Schiff and H. Felson, with technical assistance of Jane Graff and Betty Meyer, Cincinnati.—p. 292.
- \*Migraine; Epilepsy: Their Association with Hypothyroidism. A. I. Rubenstone, Philadelphia.—p. 295.
- Phenolphthalein. H. W. Soper, St. Louis.—p. 297.
- Study of Diseases in the Negro, with Particular Reference to the Gastro-intestinal Tract. I. C. Sharon, Cincinnati.—p. 298.
- Practical Method for Determining Concentration of Buffer Salts in the Body Fluids. A. W. Oelgoetz, Columbus, Ohio.—p. 311.
- Terminal Ileitis: Conservative Surgical Treatment. I. Kross, New York.—p. 313.
- Karaya Gum as Mechanical Laxative: Experimental Study on Animals and Man. A. C. Ivy and Bertha L. Isaacs, Chicago.—p. 315.
- Intussusception in the Adult. R. Finkelstein, Brooklyn.—p. 322.

**Migraine, Epilepsy and Hypothyroidism.**—Rubenstone describes a woman with migraine and epilepsy whose two daughters were subject to migraine, one with the abdominal type and the other the cephalic. Hypothyroidism without the picture of myxedema was found in all three. They promptly responded to thyroid replacement therapy. Of the many theories regarding etiology, the most plausible is inherited allergic susceptibility with superimposed exciting causes, endocrine imbalance being the most prominent. The frequent low metabolic readings are significant of lowered thyroid function. The symptomatic relief produced by ergotamine tartrate may be due to its suddenly boosting endocrine function. For the recognition of the hypothyroid state it is important that basal metabolic readings be made as near as possible to an approaching attack and never immediately after.

### American Journal of Physiology, Baltimore

123: 1-280 (July) 1938

- Experimental Renal Hypertension and Adrenalectomy. D. A. Collins, Minneapolis, and E. H. Wood, Philadelphia.—p. 224.
- Nitrogen Excretion on Nitrogen Free Diet. W. H. Seegers, Yellow Springs, Ohio.—p. 233.
- Experimental Production of Ovulation, Luteinization and Cysts of Corpus Luteum in Adrenalectomized Aneestrous Cats. H. B. Friedgood and M. A. Foster, Boston.—p. 237.
- \*Observations on Blood Sugar Level Before, During and After Hunger Periods in Humans. W. W. Scott, C. C. Scott and A. B. Luckhardt, Chicago.—p. 243.
- Effect of Alcohol on Hunger Sense. C. C. Scott, W. W. Scott and A. B. Luckhardt, Chicago.—p. 248.
- Effect of Calcium on Output of Sympathin in the Frog's Heart. K. Lissak, Boston.—p. 256.
- Excretion of Endogenous "Creatinine" by the Human Kidney. T. Findley Jr., St. Louis.—p. 260.
- Effect of Combined Thyroidectomy and Gonadectomy on Compensatory Adrenal Hypertrophy in Unilaterally Adrenalectomized Rats. Isidore T. Zeckwer, Philadelphia.—p. 266.
- Utilization of  $\beta$  Hydroxybutyric Acid by Isolated Mammalian Heart and Lungs. R. H. Barnes, La Jolla, Calif., E. M. MacKay, San Diego, Calif.; G. K. Moc, and M. B. Visscher, Minneapolis.—p. 272.

**Blood Sugar Level and Hunger.**—The Scotts and Luckhardt find that the level of the blood sugar of the fasting human subject remains constant at the time the empty stomach is undergoing changes in activity. If there was any causal relationship between this level and hunger contractions this would not be the case. If a causal relationship existed, there should be a fall (or rise) in the level of the blood sugar preceding the

onset of the contractions and a subsequent rise (or fall) in the level after the contractions had ceased. This order of events would have to repeat itself before each succeeding hunger period. No evidence could be found for these hypotheses.

### Annals of Otol., Rhinol. and Laryngology, St. Louis

47: 291-576 (June) 1938. Partial Index

- Base of Skull, with Particular Reference to Fractures. W. J. Mellinger, Santa Barbara, Calif.—p. 291.
- Treatment of Tuberculosis of Trachea and Bronchi. J. D. Kernan, New York.—p. 306.
- Further Study of Pathology of Acute Laryngotracheobronchitis in Children. L. Richards, Boston.—p. 326.
- \*Analysis of Seventy-Five Cases of Bronchiectasis from the Point of View of Sinus Infection. R. L. Goodale, Boston.—p. 347.
- Clinical Application of Galvanic Faling Reaction. E. J. Blonder, Chicago.—p. 384.
- Longitudinal and Cavernous Sinus Thrombosis. C. W. Irish, Los Angeles.—p. 402.
- Reconstruction Surgery of the Nose. G. W. Pierce and G. B. O'Connor, San Francisco.—p. 437.
- Laryngectomy: One Stage. W. F. Zinn, Baltimore.—p. 453.
- Calcium Cevimate in Treatment of Acute Rhinitis. S. L. Ruskin, New York.—p. 502.
- Studies on Intranasal Preventive Treatment of Poliomyelitis. M. C. Myerson, New York.—p. 531.

**Bronchiectasis and Sinus Infection.**—Goodale studied the part that sinus infection played in seventy-five cases of bronchiectasis. According to x-ray evidence, forty-six patients now have chronic sinus infection and twenty-nine have negative sinuses. Of the twenty-nine negative cases, eighteen have a history or clinical evidence suggestive of sinusitis, either a recurrent acute sinusitis or a mild chronic sinusitis. In eleven cases (14.5 per cent) sinusitis seems to have had no part in the onset or subsequent course of the bronchiectasis. There seem to be several different diseases which can cause bronchiectasis. The largest group is that of infections of the upper part of the respiratory tract. Pneumonia alone accounts for twenty-one cases. These cases show a marked susceptibility to severe infection of the upper part of the respiratory tract. As time goes on these repeated infections have produced the picture of sinus disease which is greater than the etiology would indicate. It is found that the prevalence of sinus infection parallels the extent of the bronchiectasis. Reduced to percentages, the sinuses are infected in 40.7 per cent of those cases in which only one lobe is involved and in 73 per cent of cases in which more than one lobe is involved. Once the patient has acquired a chronic sinusitis, the chance of further damage to the lungs is increased because these patients are more susceptible to repeated infections of the respiratory tract.

### Archives of Dermatology and Syphilology, Chicago

38: 1-162 (July) 1938

- Urticaria: VI. A New Immunologic Wheal Produced Experimentally by Reverse Technic. A. Walzer, Brooklyn.—p. 1.
- Chromoblastomycosis Caused by Fungus of Genus *Hormodendron*. J. M. Gomes, São Paulo, Brazil.—p. 12.
- \*Albuminuria in Association with Scabies: Review of Literature and Report of Urinalyses in 216 Cases. H. D. Niles, New York.—p. 19.
- Case of Inherited Ainhum-like Hyperkeratosis. R. L. Sutton Jr., Kansas City, Mo.—p. 26.
- Prediction of Surface Growth of Pathogenic Fungi on Culture Mediums: Some Factors of Importance. J. W. Williams, Cambridge, Mass.—p. 32.
- Effects of Roentgen Rays on Fungi in Vitro. H. P. Jacobson, Los Angeles.—p. 38.
- Dermatitis Produced by Petrelatum: Report of Case. L. Hollander, Pittsburgh.—p. 49.
- Mucous Gland Tumors of Skin. J. E. Ginsberg, Chicago, and M. J. Reuter, Milwaukee.—p. 52.
- Incontinentia Pigmenti (Bloch-Sulzberger): Report of Additional Case, with Comment on Possible Relation to New Syndrome of Familial and Congenital Anomalies. M. B. Sulzberger, New York, with collaboration of J. F. Fraser, New York, and L. Hutner, Richmond Hill, N. Y.—p. 57.
- \*Survey of Syphilis Among Students at University of Wisconsin. L. R. Cole, Madison, Wis.—p. 70.

**Albuminuria and Scabies.**—Niles examined the urine of 216 patients with scabies, most of whom were from the lower economic level. Their ages ranged from 19 months to 78 years. In order to eliminate the possibility of renal damage from the medication prescribed, the urine almost always was examined at the time of the first visit. Only sixteen patients showed even the slightest trace of albumin in the urine on one examination. The average age of patients of both sexes who showed

albuminuria was 6.5 years less than that of the whole group of patients with scabies. The average duration of scabies in the patients with albuminuria was 1.9 months in the entire series. This does not support the contention of some authors that albuminuria is more frequent with neglected scabies of long duration. None of the 216 patients had casts. Six patients showed varying amounts of sugar, twenty indican and twenty-seven pus cells. Of the seven patients who returned for reexamination, four failed to show albumin after the disappearance of the scabies, but in the other three albuminuria persisted for many months after the eruption had disappeared. In the three patients whose albuminuria continued after the disappearance of the scabies there probably was no relation between the two conditions, although they may furnish examples of the rare complication described by some authors as persistent albuminuria following scabies. The incidence of 7.4 per cent of albuminuria on one examination of the 216 patients suffering from scabies is not necessarily of any significance, as it is no higher than the percentage found in some reports of routine urinalyses of normal subjects.

**Syphilis Among University Students.**—Cole states that a total of 3,389 tests was done on 30.5 per cent of the student population of the University of Wisconsin. In two cases persistent 1 plus reactions and in one case a 2 plus reaction were found. The two patients with 1 plus reactions were women and the 2 plus reaction was that of a man from rural Wisconsin. Two men from urban centers in Wisconsin were discovered to have 4 plus reactions. These patients reported to the department of student health and were referred to private physicians for treatment. Six doubtful reactions were reported but the subjects never showed anything more than doubtful reactions. A legitimate criticism that the student with known syphilis will not report in a voluntary program of this type may be raised. Syphilis, however, seems to be extremely rare. Of approximately 2,000 admissions to the infirmary and approximately 50,000 outpatient visits during any year, only one or two cases of syphilis were discovered. Wassermann tests should be performed as a routine on each newly entering student and on each graduating student.

### Archives of Surgery, Chicago

37: 1-174 (July) 1938

- Stereomicroscopic Study of Surface of Lung: I. Description of Methods Used. M. Joannides, Chicago.—p. 1.  
 Id.: II. Anatomic and Physiologic Structure of Normal Lung: Résumé of Observations Based Largely on Stereomicroscopic Study of Surface of Lungs Fixed and in Living State. M. Joannides, Chicago.—p. 7.  
 \*Chronic Appendicitis: Is It a Clinical Entity? II. J. Shelley, New York.—p. 17.  
 Subacute Infections of Bone: Osteoperiostitis Aluminosa Ollier. J. R. Kuth, Duluth, Minn.—p. 46.  
 Tic Douloureux: Partial Section of Root of Fifth Cranial Nerve; Comparison of Subtemporal and Cerebellar Approaches from Surgical and Physiologic Standpoints. O. R. Hyndman, Iowa City.—p. 74.  
 Thrombosis of Left Internal Carotid Artery. W. H. Chao, S. T. Kwan, R. S. Lyman and H. H. Loucks, Peking, China.—p. 100.  
 \*Pilonidal Sinus: Sclerosing Method of Treatment. L. H. Block, Chicago, and B. L. Greene, Elgin, Ill.—p. 112.  
 New Apparatus for Maintaining Hot Compresses at Constant Temperature. K. L. Cooley, Rochester, N. Y.—p. 123.  
 Bilateral Collapse Therapy in Treatment of Pulmonary Tuberculosis. B. P. Potter, Secaucus, N. J.—p. 132.  
 Duodenogastric Intussusception: Its Clinical Application and Results. J. K. Berman, Indianapolis.—p. 139.  
 Origin of Carcinoma in Chronic Gastric Ulcer. S. H. Klein, New York.—p. 155.

**Chronic Appendicitis.**—In an attempt to determine whether or not there is such a clinical entity as chronic appendicitis, Shelley compared the pathologic changes in appendixes believed either before or after removal to have been the cause of symptoms with the changes in those which apparently had never been the cause of symptoms. He determined the incidence of pathologic changes in appendixes supposed to have been the cause of symptoms according to symptoms, physical and laboratory observations, sex and age. The percentages of the patients followed up who remained free from symptoms was computed according to the pathologic change found in the appendix. A chronic inflammatory process, adhesions, fecaliths or combinations of these conditions in the appendix have been shown to be the cause of definite symptoms and physical changes which can be relieved by appendectomy. A general term "chronic

appendicitis" is suggested to cover these conditions. In properly selected cases an appendectomy for chronic appendicitis gives an excellent expectation of cure, but the following points should be considered: 1. In the presence of a history of nausea and vomiting or of constipation, especially in women, particular care must be exercised in the selection of cases. 2. The more definite and localized the physical changes, the better is the expectation of cure. When tenderness is found in other parts of the abdomen than the lower part of the right quadrant, one should be most reluctant to attribute the patient's symptoms to chronic appendicitis. 3. The expectation of cure is excellent when there is a history of more than one attack within a period of one year or less, much poorer when the attacks cover a period longer than one year and poorest when the patient is operated on in or following the first attack. When no inflammatory change is found in the appendix, the expectation of cure is not good unless either adhesions or fecaliths are present, in which case the results are nearly equal to those obtained when inflammatory changes are present. Owing to recurrent attacks, there is evidently an increase in the pathologic condition in the appendix, as the change with age is much more marked than in the absence of symptoms attributable to the appendix. When a patient has been operated on because of symptoms and physical signs diagnostic of acute or subacute appendicitis and, instead, one of the types of chronic appendicitis (or adhesions or fecaliths without inflammation) is found, the expectation of a permanent cure is excellent.

**Pilonidal Sinus.**—Block and Greene discuss four years of experience with the use of a sclerosing solution in the treatment of pilonidal sinus. The sclerosing method was employed in eleven cases of pilonidal sinus, whether the condition was acute or chronic and whether it was simple or complicated. In two or three days after an initial simple incision of the sinus, the sclerosing treatment is instituted. The pack is removed carefully and gently; the table is tilted so as to lower the upper half of the body to an angle of about 66 degrees, and the wound is completely filled with a 2 per cent solution of butyn for five minutes (anesthesia). The skin around the wound is covered with petrolatum or a zinc oxide ointment. The butyn solution is then wiped up and the wound is filled completely with a modified Carnoy solution, which is allowed to remain for five or ten minutes (usually only five minutes). This tans the tissue and acts as an effective hemostatic. Any excess solution is then removed and the wound is packed carefully, as before, with iodoform gauze. A proper dressing is applied. This process is repeated every three or four days until complete healing ensues. It is imperative to prevent bridging over by frequently and carefully testing the resultant scar for any areas of defective healing. Occasionally it may be necessary to incise the operative area two or three times to insure the formation of a solid scar. The postoperative pain was trivial. A few patients complained of some discomfort for an hour or two after the treatment, but no patient complained of disabling pain. In most cases there was no purulent discharge after the first application of the sclerosing solution. There was rapid filling in of healthy granulation tissue. The minimal time required for complete healing was about four weeks and the maximum was ten weeks. The number of treatments varied from a minimum of eight to a maximum of twenty-two. The total average number of treatments after the initial incision was 16.2. There was absolutely no hospitalization, no loss of time from work or pleasure and no recurrence. In every instance a firm, simple, freely movable incisional scar formed, completely free from residual symptoms.

### Bulletin New York Academy of Medicine, New York

1-1: 383-450 (July) 1938

- \*Viruses and Virus Diseases. T. M. Rivers, New York.—p. 383.  
 Isolation and Properties of Tobacco Mosaic and Other Virus Proteins (Harvey Lecture, March 17, 1938). W. M. Stanley, Princeton, N. J.—p. 398.  
 Vascular and Renal Complications of Pregnancy. W. W. Herrick, New York.—p. 429.

**Viruses and Virus Diseases.**—Rivers emphasizes the following points: There is no adequate reason why inanimate agents cannot induce infectious diseases. Nor is it sensible to state that protozoa, fungi, bacteria, spirochetes and rickettsiae are the only forms of living organisms capable of producing



such maladies. With regard to the nature of viruses there are three possibilities: Some of the viruses may be infinitely small living organisms, the midgets of the microbial world, possessed of a nature similar to that of living entities of sorts already known, ordinary bacteria and unicellular animals, differing from them only in respect to size; others may represent forms of life that are as yet unfamiliar, while still others may be inanimate transmissible incitants of disease. One, two or all three of the possibilities may be found to hold. Consequently, final decision regarding the matter should be deferred. In spite of the fact that some infectious agents may turn out to be fabrications of their hosts, one can safely say that no one has yet established the spontaneous origin of a single infectious disease and that regarding such diseases the law of obligate communicability still prevails.

### California and Western Medicine, San Francisco

49: 1-104 (July) 1938

- Syphilis in Relation to Surgical Problems. U. J. Wile, Ann Arbor, Mich.—p. 7.  
Statewide Mental Hygiene Program: Its Importance to California. F. O. Butler, Eldridge.—p. 11.  
Clinical Experiences and Experiments with Protamine Zinc Insulin: Potential Danger of Hypoglycemia. J. W. Sherrill, La Jolla.—p. 13.  
Creatinuria of Childhood, with Special Reference to Bone Age. E. K. Shelton and B. N. Tager, Los Angeles.—p. 20.  
Roentgen Ray Pelvimetry: Study of 320 Labors. C. T. Hayden, San Francisco.—p. 25.  
Clinical Management of Skin Cancer. E. Liljencrantz and G. V. Kulchar, San Francisco.—p. 30.  
Chronic Duodenal Stasis: Syndrome with Neurologic Symptoms. F. L. Reichert, San Francisco.—p. 37.  
Ear Manifestations Following Head Injuries. F. Hand, San Francisco.—p. 42.  
Anomalies of the Spine: Correlation of Anatomic, Roentgenologic and Clinical Findings. W. Bailey and R. A. Carter, Los Angeles.—p. 46.

### Canadian Public Health Journal, Toronto

29: 251-320 (June) 1938. Partial Index

- Bovine Tuberculosis in Children. R. M. Price, Toronto.—p. 251.  
Survey of Certain Milk Borne Diseases in Canada. R. D. Defries, Toronto.—p. 255.  
Bovine Tuberculosis in Canada. A. E. Cameron, Ottawa, Ont.—p. 262.  
Changing Methods for Quantitative Estimation of Bacteria in Milk. H. R. Thornton, Edmonton, Alta.—p. 270.  
Coliform Test in Pasteurized Milk. A. B. Moffat and J. Mackay, Toronto.—p. 283.  
Use of Phosphatase Test in Control of Pasteurization. M. Doreen Smith, Toronto.—p. 288.  
Nutritional Value of Raw and Pasteurized Milk. E. W. McHenry, Toronto.—p. 295.  
Survey of Milk Control in Cities and Towns in Canada. A. E. Berry, Toronto.—p. 305.

### Connecticut State Medical Society Journal, Hartford

2: 309-356 (July) 1938

- Treatment of Congenital Syphilis. P. Harper, Bridgeport.—p. 319.  
\*Treatment of Bronchiectasis by Pulmonary Lobectomy: Summary of Ten Consecutive Cases. G. E. Lindskog, New Haven.—p. 320.  
Studies in Convulsant Therapy: I. Technic and Clinical Phenomena. S. R. Dean, Newtown.—p. 325.  
Cystic Tumor of the Tail of the Pancreas: Report of Case. S. V. Kibby, Los Angeles.—p. 331.  
Lymphocytic Choriomeningitis: Report of Three Cases. A. H. Jackson, Waterbury.—p. 333.  
Standard Procedure for Performance and Interpretation of Tuberculin Test. P. S. Phelps, Hartford.—p. 337.

#### Treatment of Bronchiectasis by Pulmonary Lobectomy.

—Lindskog performed lobectomy in ten consecutive cases of bronchiectasis. The ages of the patients ranged from 10 to 43 years. The disease was bilateral in two and unilateral in eight. The shortest duration of symptoms prior to operation in any instance was six months, the longest from fifteen to twenty years. Cough and sputum were present in all. Hemoptysis was present at some time in seven of the ten cases and was recurrent and severe in six. Clubbing of the fingers was present to a noticeable degree in seven instances and was quite marked in several of these. The operative removal of the affected lobe or lobes was carried out in one stage, if the pleural cavity was found obliterated by adhesions at the time of the primary operation. This occurred in six cases. In three a two stage operation was done, the first stage consisting simply of thoracotomy, exploration and dissection of the affected lobe and the freeing of the pulmonary ligament followed by a mechanical abrasion of the parietal pleura with gauze to promote the formation of

adhesions. The chest was then closed without drainage and the actual lobectomy was performed from two to six weeks later. At the time the diseased lobe or lobes were removed, the remaining cavity in the thorax was drained with a rubber tube or intercostal catheter until the cavity was entirely obliterated. The closure of the remaining space is effected by a compensatory enlargement of the residual lobe or lobes, elevation of the diaphragm, shift of the mediastinum and some contracture in the bony thorax. Evidences of bronchial fistulas in the healing hilus appeared postoperatively in seven instances, usually during the second week. All closed readily and spontaneously without further procedures. The postoperative hospitalization ranged from five to eleven weeks. There has been one operative death. The other nine patients are all living; the one operated on most recently is still in the hospital. Six patients are apparently in excellent condition, either cured or so greatly improved that they are able to lead a normal life. Four of these patients are completely free of cough and sputum, and two have occasional cough and sputum to a maximum of from 5 to 10 Gm. daily. Only one patient is considered to be in poor condition. In this instance a middle lobe was removed after several cautery operations had been performed by several surgeons for abscess of the lung. A lobectomy is contemplated for the remaining disease of the lower part of the right lobe. No patient has experienced a recurrence of hemoptysis. All have gained weight. None have suffered dyspnea after convalescence even with moderate exertion. A reduction in the available respiratory space has not been observed.

### Delaware State Medical Journal, Wilmington

10: 123-146 (June) 1938

- Extensive Case of Creeping Eruption from the State of Delaware. F. E. Kunkel, Philadelphia.—p. 123.  
Urology: Its Relation to General Medicine. L. W. Anderson, Wilmington.—p. 129.  
Forced Drainage of the Central Nervous System. S. Rochelson, New York.—p. 136.

### Georgia Medical Association Journal, Atlanta

27: 253-296 (July) 1938

- Relief of Causalgic-like Pain in the Isolated Extremity by Sympathectomy: Case Report. R. F. Slaughter, Augusta.—p. 253.  
The Changing Emphasis in Heart Disease. H. C. Atkinson, Macon.—p. 257.  
Study of Maternal Mortality and Infant Deaths, 1937. H. F. Sharpley Jr., Savannah.—p. 261.  
Some Errors in Diagnosis and Treatment of Cardiovascular Disease: Underdigitalization and Overdigitalization. H. Roesler, Philadelphia.—p. 267.  
Crippled Children. F. G. Hodgson, Atlanta.—p. 271.  
Perforated Peptic Ulcer: Report of Forty-Three Cases in the Negro. C. C. Garver, Atlanta.—p. 273.  
Differential Diagnosis of Thyroid Disease: Indications for Medical, X-Ray and Operative Treatment. M. M. Hagood, Marietta.—p. 278.

### Journal of Immunology, Baltimore

34: 429-500 (June) 1938

- \*Supplementary Report on Importance of Clostridium Welchii as an Etiologic Factor in Toxemia of Spreading Peritonitis Following Acute Perforative Appendicitis. H. A. Mingle, N. F. Paxson and J. O. Bower, Glenolden, Pa.—p. 429.  
Serologic Tests with Pyrazolone Compounds. R. A. Harte, New York.—p. 433.  
Blood Groups of Rwala Bedouin. W. C. Boyd and L. G. Boyd, Boston.—p. 441.  
Survival of Influenza Virus Under Various Conditions. H. W. Scherp, E. W. Flosdorf and Dorothy R. Shaw, Philadelphia.—p. 447.  
Soluble Edema-Producing Substance from the Pneumococcus. W. D. Sutcliffe and T. E. Friedemann, Chicago.—p. 455.  
Improved Procedure and Apparatus for Preservation of Serums, Micro-organisms and Other Substances—The Cryochem Process. E. W. Flosdorf and S. Mudd, Philadelphia.—p. 469.

**Clostridium Welchii in Spreading Peritonitis.**—Mingle and his co-workers induced spreading peritonitis in twenty dogs which had previously been immunized against Clostridium welchii toxin, in order to ascertain what proportion of the animals so immunized would survive the infection. No other treatment was given. Spreading peritonitis was induced by opening the abdomen under strict aseptic precautions, ligating the appendix at its base, dissecting off and ligating the mesentery and administering 2 ounces (60 cc.) of castor oil. Of the twenty dogs, thirteen lived and seven died. This mortality may be compared with a control mortality, previously established in

earlier investigations, of more than 91 per cent. The marked drop in mortality in this group as compared with the control group leads one to believe that the toxemia accompanying spreading peritonitis may be largely produced by the toxin of *Clostridium welchii*.

### Journal of Lab. and Clinical Medicine, St. Louis

23: 999-1110 (July) 1938

- Effect of Temperature on Digitalis Action. R. A. McGuigan, Chicago.—p. 999.
- \*Excretion of Ingested Ethyl Alcohol in Saliva. T. E. Friedemann, W. G. Motel and H. Necheles, Chicago.—p. 1007.
- \*Comparison of Methods for Detecting and Grading Subclinical Scurvy. R. A. Sloan, Valhalla, N. Y.—p. 1015.
- Staining Reactions of Fats After Use of Various Dyes and Fixing Agents. C. E. Black, Ann Arbor, Mich.—p. 1027.
- Effects of Ligation of Common Bile Duct on Blood Iodine and Blood Counts of Male Rabbits. J. L. DeCoursey, C. D. Stevens, R. Weiskittel and N. Brower, Cincinnati.—p. 1037.
- Cytologic Comparison of Malignant and Nonmalignant Nuclei and Nucleoli. M. Eva Haumeder, New Hampton, Iowa.—p. 1046.
- \*Superimposed Infection in Rheumatic Heart Disease. G. Friedman and J. R. Lisa, New York.—p. 1052.
- Pressor Episodes, Diets and Toxicity of Morphine Sulfate. A. J. Nedzel, Chicago.—p. 1063.
- Colloidal Carbon Flocculation Test in Spinal Fluid for Diagnosis of Neurosyphilis. S. Selesnick, Boston.—p. 1068.
- Perfusion Stage for Observations on Daphnia. W. Tinsley, Chicago.—p. 1076.
- Modification of Titan Yellow Method for Determination of Small Amounts of Magnesium in Biologic Fluids. V. G. Haury, Philadelphia.—p. 1079.
- Limits of Usefulness of Direct and Indirect Methods of Determining Venous Pressure in Man. H. K. Beecher and M. E. Cohen, Boston.—p. 1088.
- Method for Collecting Blood for Gas Analysis. J. Adriani, New York.—p. 1094.
- Improved Method for Preparation of Urease Paper. B. Klein, Brooklyn.—p. 1097.
- Determination of Sulfanilamide in Blood. J. Kamlet, Brooklyn.—p. 1101.

**Excretion of Alcohol in Saliva.**—Friedemann and his collaborators devised a simple and reliable procedure for the collection of mixed saliva. In addition to simple diffusion, other factors probably also affect the concentration of alcohol in saliva. However, the relatively slight differences which they found in the concentration of alcohol in human blood and saliva do not prevent its application for physiologic study and for medicolegal purposes. The mouth is rinsed thoroughly several times; at least five minutes should elapse before the saliva is collected, during which time a small square of petrolatum is chewed. About 5 cc. or more, if possible, of saliva is collected in a small test tube (18 by 200 mm.) which is provided with a tightly fitting stopper. The tube should contain approximately 10 mg. of sodium fluoride to preserve the sample. For best results the sample should be kept in the refrigerator and all analyses should be made within twenty-four hours. For collection of subsequent samples it is not necessary for the subject to rinse the mouth, unless alcohol has been taken in the intervening period. For determining the alcohol content of the body, 1 cc. of saliva is transferred to a 300 cc. Kjeldahl flask. The pipet is allowed to empty slowly, since saliva is viscous. The distillation and final oxidation are then carried out by the method of Friedemann and Klaas. Samples of 1 cc. of blood and urine were similarly analyzed and compared. It was found that the concentration of alcohol in mixed saliva more closely approaches that of venous blood than does the concentration of alcohol in the urine. For this and for technical reasons the use of saliva is proposed for medicolegal purposes.

**Detecting Subclinical Scurvy.**—Of the single determinations for detecting and grading subclinical scurvy the blood assay, Sloan believes, is the most informative but the saturation tests yield more precise and quantitative information. The added difficulties of the latter preclude their use in routine work, while the simple blood examination is one easily adaptable to hospital routine. For thorough study of the vitamin C reserves and rate of consumption the saturation tests, and particularly the blood curve, are more satisfactory. It is probable that these procedures will supplant the capillary resistance test because of their greater dependability. The capillary resistance test is the simplest procedure and it may be tested at the bedside, but its greatest drawback in adults in the present study was the occurrence of falsely negative results due to

severe anemia. The most precise and dependable method of determining the degree of saturation of vitamin C is the determination of the rate of absorption of an injected dose from the blood stream. The rate of excretion of a test dose is less precise but quite dependable.

**Superimposed Infection in Rheumatic Heart Disease.**—Subacute bacterial endocarditis has generally been considered a superimposed infection when it occurs in cases of rheumatic cardiac disease. Pending the elucidation of the bacteriology of rheumatic fever, the term "superimposed" infection must be used with the reservation required by the allergic hypothesis. Subacute bacterial endocarditis is not the only superimposed infection found in rheumatic cardiac disease nor is it the most frequent. In a series of thirty cases selected as representative of rheumatic cardiac disease, Friedman and Lisa found evidence of superimposed infection in the heart in twenty-two cases. Of these, only one presented the clinical course of subacute bacterial endocarditis. The others included acute bacterial endocarditis, septicemia, erysipelas, pneumonia and peritonitis. In most of these cases, acute inflammatory, non-rheumatic lesions were found in the myocardium. In many also there was acute endocarditis which was neither bacterial nor rheumatic. Its frequent association with acute nonrheumatic myocarditis suggests that these endocarditides should be included as one of the cardiac sequelae of superimposed infection.

### Journal of Pharmacology & Exper. Therap., Baltimore

63: 99-214 (June) 1938

- Phenol Contaminated Waters and Their Physiologic Action. V. G. Heller and L. Pursell, Stillwater, Okla.—p. 99.
- Comparative Study of Effects of Barbiturates, Ether and Bulbocapnine on Micrurition. L. C. Kolb and O. R. Langworthy, Baltimore.—p. 108.
- Comparative Study of Various Agents in Chemotherapy of Rat Trichomoniasis. Phyllis M. Nelson and A. L. Tatum, Madison, Wis.—p. 122.
- Initial Depression of Heart Rate in Response to Epinephrine in Human Subjects. R. T. Fuchs, Worcester, Mass.—p. 143.
- Experimental Carbon Tetrachloride Poisoning in the Cat: I. Influence of Calcium Administration. A. Cantarow, H. L. Stewart and D. R. Morgan, Philadelphia.—p. 153.
- Study of Fibrin Factor in Its Relation to Subacute Endocarditis. M. Friedman, Chicago.—p. 173.
- Hypnotic Properties of Some Derivatives of Trihalogenated Alcohols. R. R. Burtner and G. Lehmann, Louisville, Ky.—p. 183.
- Cardiac Arrhythmia, Characteristic Effect of Thiobarbiturates, (Pentothal, Thiopentobarbital and Thiothamy) as Influenced by Changes in Arterial Blood Pressure. C. M. Gruber, V. G. Haury and C. M. Gruber Jr., Philadelphia.—p. 193.

### Maine Medical Journal, Portland

29: 135-160 (July) 1938

- Endometriosis and Endometrioma: President's Address. R. W. Wakefield, Bar Harbor.—p. 135.
- Acute Lymphocytic Meningitis and Other Virus Diseases of the Central Nervous System. H. R. Viets, Boston.—p. 137.
- Laurence-Moon-Biedl Syndrome: Report of Two Cases. L. A. Parrella, Lewiston.—p. 140.

### Minnesota Medicine, St. Paul

21: 455-528 (July) 1938

- \*Poliomyelitis, with Special Reference to the Drinker Respirator Therapy. A. V. Stoesser and W. S. Sako, Minneapolis.—p. 455.
- Syphilis in the Transient. P. A. O'Leary, Rochester.—p. 459.
- Chorionepithelioma with Report of Case: Survey of Incidence in St. Paul Hospitals. C. W. Froats, St. Paul.—p. 463.
- Spina Bifida Cystica of Pelvis: Diagnosis and Surgical Treatment. A. W. Adson, Rochester.—p. 468.
- Carcinoma of Gallbladder. W. C. Carroll, St. Paul.—p. 476.
- Recurrent "Tropical" Lymphangitis: Report of Case. R. C. Logefield and R. A. Hoffman, Minneapolis.—p. 479.
- Intestinal Obstruction Due to Calcified Mesenteric Glands. J. M. Culligan, St. Paul.—p. 482.
- Bromides, Their Use and Abuse. G. R. Kamman, St. Paul.—p. 484.
- Acute Pulmonary Edema Occurring During Pregnancy or Labor. F. J. Schatz, St. Cloud.—p. 491.
- Hyperpyrexia in the Newborn: Report of Infant with 107 F. by Rectum at Age of Fifty-Three Hours. L. F. Richdort and W. H. Ford, Minneapolis.—p. 496.

**Poliomyelitis.**—Seventy-nine cases of poliomyelitis were admitted to the University and Minneapolis General Hospitals from July 1 to Dec. 31, 1937, and of this number twenty-nine patients had some respiratory distress. Physicians tend to place all their patients with respiratory difficulty in the respirator. Stoesser and Sako feel that this is a poor pro-

cedure, as some patients are made worse while in the Drinker respirator. The most important problem is the careful selection of the patients for treatment. In cases in which there is a direct paralysis of the muscles of respiration innervated by the nerves from the dorsal and cervical spinal cord the patient cannot sleep, but when he is placed in the Drinker respirator the response is usually dramatic. The cyanosis disappears and the face assumes its natural color and expression. After the patient's breathing and the respirator become synchronous, he falls into a deep sleep which may last many hours. In bulbar disease in which there is involvement of the nuclei of the cranial nerves with apparent injury of the respiratory center, the patients usually do badly in the respirator. Nine of the authors' patients had pharyngeal paralysis with some interference in proper breathing. None were treated in the Drinker respirator and all recovered. Two patients also had facial paralysis, and this cleared up satisfactorily. There were, however, six cases of the bulbar type with definite respiratory difficulty. Two patients were placed in the Drinker respirator but they did poorly and died in a short time. It was apparent that the machine caused aspiration of material from the throat and at the same time overcame the reflex choking and coughing by which this material could be ejected. The remaining four patients were treated by elevating the bed to facilitate drainage, suction of secretion, postural drainage, fluids parenterally and transfusions. The progress in all but one was favorable. In bulbospinal cases if the paralysis of the pharynx is bilateral, as indicated by a total inability to swallow, the machine is ineffective. This was easily demonstrated by the fact that five of six bulbospinal patients were placed in the Drinker respirator and none survived. They all had a bilateral paralysis of the pharynx. The one patient who was not put in the Drinker respirator therapy was not gravely ill. There was only a partial involvement of the muscles of respiration and a unilateral pharyngeal paralysis. This patient recovered. In conclusion the respirator is effective in patients with spinal respiratory involvement. In the bulbar type of paralysis with glossopharyngeal and vagal involvement, the respirator often offers little help.

### New England Journal of Medicine, Boston

218:1033-1086 (June 23) 1938

- \*Treatment of Pneumococcal Meningitis: Study of Ten Cases Treated with Sulfanilamide Alone or in Various Combinations with Specific Antipneumococcus Serum and Complement, Including Six Recoveries. M. Finland, J. W. Brown and A. E. Rauh, Boston.—p. 1033.  
Operative Mortality of Cholecystitis. P. L. Boyd, Boston.—p. 1045.  
\*Failure of Nicotinic Acid in Treatment of Anemia. O. C. Hansen-Pruss, Durham, N. C.—p. 1050.

**Pneumococcal Meningitis.**—Of the ninety-nine patients with pneumococcal meningitis seen at the Boston City Hospital between November 1929 and June 1936, none recovered except six of the ten whom Finland and his co-workers treated with sulfanilamide alone or with serum. The procedure adopted was as follows: 1. Complete and frequent drainage of the spinal fluid was carried out. 2. Continuous large doses of sulfanilamide by mouth or by subcutaneous injection, if necessary, were used immediately. The optimal dose has not been determined. Sodium bicarbonate was given with each dose. 3. The pneumococcus was identified as rapidly as possible and sufficient specific antipneumococcus serum was given intravenously to establish a balance of antibody in the circulating blood. 4. To insure adequate amounts of spinal fluid for drainage, the fluid intake was moderate. 5. About two hours after a reasonable dose was given, blood was withdrawn from the patient and the serum was separated. 6. Following the removal of spinal fluid, at the time of the next lumbar puncture, this serum was given intraspinally (from 5 to 10 cc.). This procedure may be repeated after subsequent lumbar punctures, if necessary. 7. Lumbar punctures were repeated until the fluid was normal. The frequency was determined by the initial pressure of the fluid and its cellular and protein contents. 8. Transfusions were given after the first week of sulfanilamide therapy if anemia developed and were repeated, as necessary, until the drug was discontinued (after from seven to fourteen days of sterile fluids). These procedures serve to ensure a balance of antibody in the blood stream and to control the

bacteremia. They should, in most instances in which the sulfanilamide effectively reduces the infection, provide an adequate amount of antibody and complement in the optimal proportions and in a medium which is likely to give the least local or general reaction and the greatest antibacterial effect. A summary of the case histories and laboratory studies is given.

**Nicotinic Acid in Anemia.**—Hansen-Pruss administered nicotinic acid (Eastman) to three patients with pernicious anemia, one with hyperchromic anemia and liver disease, one with idiopathic hypochromic anemia and two with myeloid leukemia. Each of the seven patients was given 60 mg. of nicotinic acid daily, by intramuscular or by intravenous injection. In two cases an evanescent flushing and subjective feeling of warmth followed the first of several injections. No other reactions were observed. In addition to frequent peripheral blood counts, cell counts were done directly on material aspirated from the sternal bone marrow. The nicotinic acid had no antianemic value in the seven instances. The only hematologic change observed was a temporary depression of myeloid function, as indicated by a drop in the leukocyte count of the bone marrow. This fall was not mirrored in the leukocyte count or in the Schilling hemogram of the peripheral blood. Nicotinic acid apparently had no effect on the platelet count. Thrombopenia in the cases of Addison-Biermer anemia, when present, persisted until treatment with liver was instituted.

### New Orleans Medical and Surgical Journal

91:1-56 (July) 1938

- Did Clinical Specialization Anticipate Scientific Medicine? The Annual Oration. E. H. Cary, Dallas, Texas.—p. 1.  
Necessity for Public Cooperation in the Control of Venereal Disease. W. A. Reed, New Orleans.—p. 7.  
Present Status of Venereal Disease Control in Louisiana. J. A. Coleman, New Orleans.—p. 10.  
Diagnosis and Treatment of Gonorrhea. E. Burns, New Orleans.—p. 12.  
Complications to Antisiphilic Therapy. J. K. Howles, New Orleans.—p. 15.  
Radiation Technic in Carcinoma of Uterus. S. C. Barrow, Shreveport, La.—p. 19.  
Treatment by Roentgen Ray of Conditions Other Than Cancer: The Manner of Application. H. O. Barker, Alexandria, La.—p. 24.  
Primary Ovarian Pregnancy: Case Report. J. E. Isaacson, New Orleans.—p. 27.  
Pathology of Certain Unusual Ovarian Tumors. H. J. Schattenberg, New Orleans.—p. 29.

### Pennsylvania Medical Journal, Harrisburg

41:777-878 (June) 1938

- Some Features of Biology of Syphilitic Infection. T. B. Turner, Baltimore.—p. 777.  
Acute Gonorrheal Posterior Urethritis. R. C. Hibbs, Pittsburgh.—p. 782.  
Sarcoma in Rats Resulting from Ingestion of Crude Wheat Germ Oil Made by Ether Extraction. L. G. Rowntree, A. Steinberg, G. M. Dorrance and E. F. Ciccone, Philadelphia.—p. 784.  
Carcinoma of the Colon, with Especial Reference to the Rural Patient. H. L. Foss, Danville.—p. 788.  
When Is an Acute Abdomen Not an Acute Surgical Abdomen? J. O. Bower, Philadelphia.—p. 792.  
Convulsive Disorders. W. Shapera, Pittsburgh.—p. 797.  
Pathogenesis of Convulsive Disorders. Mona Spiegel-Adolf and E. A. Spiegel, Philadelphia.—p. 802.  
Urinary Stasis as Related to Kidney Pelvis and Ureter. W. W. Wightman, Pittsburgh.—p. 803.  
Principles of Proctologic Surgery. H. Z. Hibshman, Philadelphia.—p. 811.

### Public Health Reports, Washington, D. C.

53:1003-1064 (June 24) 1938

- \*Studies on Epidemiology of Poliomyelitis. C. C. Dauer.—p. 1003.  
Studies on Dental Caries: IV. Tooth Mortality in Elementary School Children. J. W. Knutson and H. Klein.—p. 1021.  
Study of Pseudotuberculosis Rodentium Recovered from a Rat. V. H. Haas.—p. 1033.

**Epidemiology of Poliomyelitis.**—Dauer gives information on the prevalence of poliomyelitis in the United States since 1916, reviews the epidemiology of the disease as it was presented in 1916 and its developments during the succeeding twenty years, and presents in detail the distribution of the disease by counties from 1933 to 1937 inclusive. A study of case fatality rates disclosed the fact that there were wide fluctuations from year to year in some states, suggesting that cases were well reported in epidemic years and poorly reported in the intervals between epidemics. In other states case fatality

rates fluctuated within fairly definite limits, which might be regarded as an indication of fairly uniform reporting. The decline in case fatality rates in the last ten to fifteen years might be explained on the basis of more complete reporting of cases, the inclusion of more abortive and nonparalytic cases among those reported, of a difference in the virulence of the virus, a more resistant host, or by a combination of two or more of these factors. From 1916 to 1937 inclusive, outbreaks of poliomyelitis have shown two characteristics: In 1916, 1921, 1927, 1928, 1931, 1934 and 1937 they were widespread and affected fairly large areas. In the intervals between these widespread outbreaks, localized epidemics occurred in more or less restricted regions. The same geographic area is not always affected in successive outbreaks. The most definite change in the occurrence of poliomyelitis since 1916 has been in the age distribution of persons affected. In 1916 and previous to that time, from two thirds to three fourths of the cases reported were in children less than 5 years of age, while one fifth or less were in persons 10 years of age and over. Since 1930, from one third to one half of the reported cases have been in children less than 5 years of age and from one fourth to one third in persons 10 or more years of age. This change has been a gradual one over the last twenty years. Except for this change in age distribution there seems to have been little change in the behavior of the disease in recent years. The disease is found in all parts of the country.

### Rocky Mountain Medical Journal, Denver

35: 425-504 (June) 1938

- Diagnosis and Curability of Intra Oral Cancer. H. E. Martini, New York.—p. 442.  
Surgery versus Conservatism in Treatment of Pulmonary Tuberculosis. H. C. Warren, San Francisco.—p. 449.  
Old Age as Physiologic State. W. Darley, Denver.—p. 456.  
The Medical Care of the Aged. R. W. Gordon, Denver.—p. 458.  
Surgery in the Aged. W. H. Mast, Gunnison.—p. 461.  
Respiratory Conditions in the Dust Bowl. C. T. Knuckey, Lamar, Colo.—p. 466.  
Primary Carcinoma of Lung. L. W. Frank, Denver.—p. 468.  
Chronic Myocardial Disease: Study of Relationship Between Physical and Electrocardiographic Findings in Seventy Cases of Myocardial Disease. R. S. Hubbs, Sheridan, Wyo.—p. 474.

### Southern Medical Journal, Birmingham, Ala.

31: 709-826 (July) 1938

- Physiologic Approach to Correction of Constipation. P. B. Welch and F. H. Kauders, Miami, Fla.—p. 709.  
\*Intestinal Tuberculosis: Pathologic and Clinical Survey. C. T. Stone and L. W. Sheekles Jr., Galveston, Texas.—p. 715.  
Treatment of Hypoparathyroidism with Dihydroachysterol. C. M. MacBryde, St. Louis.—p. 720.  
Management of Pyelitis of Pregnancy. H. K. Turley, Memphis, Tenn.—p. 729.  
Further Observation on Intensive Radiation of Hyperthyroidism. S. C. Barrow, Shreveport, La.—p. 737.  
Rational Treatment of Acne Vulgaris. G. V. Stryker and M. G. Bloom, St. Louis.—p. 741.  
Vegetative Intimities of Pulmonary Artery in a Boy with Congenital Intraventricular Septal Defect, Persistent Conus Arteriosus and Bicuspid Pulmonary Valve: Report of Case. L. C. Posey, Birmingham, Ala.—p. 761.  
Traumatic Chylothorax. R. T. Shackelford and A. M. Fisher, Baltimore.—p. 766.  
Gas Gangrene Infections in Industrial Practice, with Especial Reference to Infections Following Compound Fractures and Other Accidents. C. H. Ramsey, Laurel, Miss.—p. 775.  
Some Modifications of Cardiorespiratory Test of Frost. O. W. Bethae, New Orleans.—p. 783.  
Occurrence of Anopheles Walkeri Theobald in Georgia. R. E. Bellamy and J. Andrews, Atlanta, Ga.—p. 797.  
Recent Developments in Methods of Mosquito Control in Antimalaria Campaigns. E. H. Hinman, Wilson Dam, Ala.—p. 805.  
Further Observations on Airplane Dusting for Anopheles Larvae Control. C. C. Kiker, C. D. Fairer and P. N. Flauary, Wilson Dam, Ala.—p. 808.  
Different Phases of Permanent Drainage for Malaria Control in Mississippi. N. H. Rector, Jackson, Miss.—p. 815.

**Intestinal Tuberculosis.**—Stone and Sheekles derive their material from the total hospital patients admitted during a period of ten years (1927-1937). From the 55,867 hospital patients, 10,545 (18.9 per cent) were in the medical service. There were in this decade 739 medical cases with a diagnosis of tuberculosis in some form. Almost 40 per cent of all the hospital cases with tuberculosis during the period came to necropsy. Sixty cases showed enteric lesions of tuberculosis

at necropsy. The condition was somewhat more than twice as frequent in the Negro. The highest incidence of intestinal tuberculosis is from the third to the sixth decade inclusive or, roughly, the same as that of tuberculosis in general. The majority of the cases of intestinal tuberculosis developed in the course of chronic ulcerative pulmonary tuberculosis, and in considerably more than half of these it was a late event in an already hopeless disease. In a small percentage of cases it was present for long periods and may well have been the precipitating cause of death. The intestinal disease was always secondary; not a single case of primary tuberculous enteritis was observed. Special types of x-ray investigation of the digestive tract of patients with tuberculosis in all forms must be undertaken if the diagnosis of intestinal tuberculosis is to be made with any degree of accuracy and at a time when treatment may be expected to be beneficial.

### Wisconsin Medical Journal, Madison

37: 529-612 (July) 1938

- \*A "Swimmer's Itch": Schistosome Dermatitis. A. C. Edwards and S. Brackett, Madison.—p. 543.  
Complemental Feeding and Care of the Skin in the Newborn. F. C. Rodda and A. V. Stoesser, Minneapolis.—p. 547.  
Radiation Therapy in Benign and Malignant Diseases of the Ear, Nose and Throat. H. W. Hefke, Milwaukee.—p. 551.  
Essential Periduodenitis. M. E. Gabor, Milwaukee.—p. 554.  
Mercurial Poisoning from Bichloride of Mercury Enema. A. M. Schwaitz, Madison.—p. 558.

**Schistosome Dermatitis.**—Edwards and Brackett state that investigations to date have revealed not only the presence of schistosome cercariae in a number of Wisconsin lakes but also their dermatitis-producing character when applied to the human skin. The commonest type of "swimmer's itch" in Wisconsin is the schistosome dermatitis of Cort. In the typical case, acquired by bathing, wading or working in infected waters, the patient does not ordinarily experience any unusual sensation until he has left the water. In from five to twenty minutes after one has left the water a tingling sensation may be felt on the portions of the body that were submerged. Within a short time, usually in from half an hour to two hours, this becomes a distinct itch and pinpoint size, red macules appear in the same area. The latter progress to papules in the course of the next twelve to twenty-four hours. After a day or so many of the papules are surmounted by a pinpoint crust, which frequently surrounds a hair follicle. The mature lesions resemble chigger bites. Some of the lesions may progress to pustules, especially if they are numerous and itching is severe. This seems to be due to secondary infection resulting from scratching. The lesions fade and disappear after a week or two but may leave a red or brown stain for some time. Cercariae which cause dermatitis are larvae of trematode worms of the family Schistosomidae. The members of this family are parasitic during their adult stage in the hepatic, portal and mesenteric veins of birds and mammals. There is a period of development in the snail. Schistosome cercariae which produce dermatitis are free swimming, colorless, multicellular organisms about 0.7 mm. in length. Snails convey the cercariae to man but birds or animals or both distribute the parasites from lake to lake. If a person is exposed to water containing them, some of them may penetrate his skin and produce the characteristic dermatitis. Man is, however, an abnormal host and the cercariae die after penetrating his skin. In Wisconsin the snails seem to become infected with the miracidium stage of the parasite sometime in the spring. Since penetration of the skin by the cercaria seems to be influenced by evaporation of the infected water which clings to the surface of the body following submersion, the disease could to some extent be prevented by immediately washing off the exposed areas with noninfected water and thorough drying. The additional use of soap or a mild antiseptic such as alcohol seems to be of further value. The simplest and most effective means of controlling the disease is to attack the snail vector of the parasite. Snails may be combated by the simple process of manually removing them from the beaches or by killing them with poisons. Copper sulfate will kill them, but it will also kill other forms of aquatic life and therefore treatment should be carried out only under the direction of the proper health or conservation authorities.

## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

### Brain, London

61: 133-236 (June) 1938

- Some Observations on Headache. D. W. C. Northfield.—p. 133.  
"Aphasia" in a Partial Deaf-Mute. M. Critchley.—p. 163.  
Gliomatosis Cerebri. S. Nevin.—p. 170.  
Subacute Diffuse Ependymitis. R. M. Stewart.—p. 192.  
The Central Pathway in Man of Vasomotor Response to Pain. D. G. Marquis and D. J. Williams.—p. 203.  
Vasomotor Control of Cerebral Vessels. H. S. Forbes and S. S. Cobb.—p. 221.

### British Medical Journal, London

1: 1249-1292 (June 11) 1938

- Clinical Aspects of Transmission of Effects of Nervous Impulses by Acetylcholine. F. R. Fraser.—p. 1249.  
\*Surgical Treatment of Disseminated Sclerosis by Sympathectomy and Ganglionectomy: Technic by Anterior Approach. C. F. Koch and E. de Savitsch.—p. 1254.  
Treatment of Placenta Praevia: Review of 286 Cases. O. Lloyd and J. E. Giesen.—p. 1258.  
Concerning the Box Mask for Oxygen Administration. J. A. Campbell.—p. 1260.  
Intranasal Application of Pollen Solution in Hay Fever. C. Francis.—p. 1263.

1: 1293-1348 (June 18) 1938

- Clinical Aspects of Transmission of Effects of Nervous Impulses by Acetylcholine. F. R. Fraser.—p. 1293.  
Hereditary Bone Tumors in Mice. F. C. Pybus and E. W. Miller.—p. 1300.  
Abdominal Pregnancy: Case. R. Reid.—p. 1301.  
Keratoplasty: Report of Case. T. H. S. Tizzard.—p. 1303.  
Superior Pulmonary Sulcus Tumor. J. L. Ryce.—p. 1304.  
Failed Splenectomy in Acholuric Jaundice, and Relation of Toxemia to Hemolytic Crises. W. N. West-Watson and C. J. Young.—p. 1305.

**Surgical Treatment of Multiple Sclerosis.**—Koch and de Savitsch report twenty-six operations (ganglionectomy and sympathectomy by the anterior approach), most of them in cases of advanced disseminated sclerosis. The operation was performed in fifteen cases of disseminated sclerosis, ten of which may be considered for statistical study, as from six to fourteen months has elapsed since the operation. Eight of the ten patients are alive today. Practically every patient, including the four most recent ones, responded favorably to this surgical procedure, which is in agreement with the observations of Wetherell. At no time were there any immediate unfavorable effects in the development of symptoms. In the majority of cases a remarkable degree of amelioration has taken place. All the patients were in an advanced stage of the disease. The authors are attempting now to operate on patients in earlier stages, in whom the evaluation of results will be considerably more difficult. Of the two fatalities one was due to embolism and the other patient died several hours after the operation from hemorrhage due to the slipping of the ligature from the thyroecervical trunk. The anticipated Horner's syndrome was observed in every patient, though enophthalmos had a tendency to regress, becoming quite inconspicuous within a few months. For about two months following the operation the patient must avoid any extreme exertion, as it may be accompanied by weakness and even collapse. After the operation some patients complain of pains in the shoulder and arm on the side of the operation. The pain lasts but a few days and usually requires no attention. In persistent cases the injection of a small amount of procaine hydrochloride gave immediate and permanent relief. Another complication seen in about one third of the cases is incontinence, which always disappeared after the first forty-eight hours. Occasionally the arm on the operated side becomes paralyzed, but the paralysis lasts only a few days and there are no residual effects.

### Glasgow Medical Journal

11: 269-324 (June) 1938

- \*Treatment of Mental Disorders by Cardiazol. A. M. Wyllie.—p. 269.  
Carcinoma of Ileocecal Valve: Report of Three Cases and Statistical Survey. H. Wapshaw.—p. 280.

**Treatment of Mental Disorders with Metrazol.**—Wyllie used metrazol in treating twenty patients with advanced schizophrenia, eight women and twelve men. Physical improvement was observed in seventeen. Those who were emaciated gained

weight rapidly, gaining from 14 to 21 pounds (6.4 to 9.6 Kg.) in two months. Their appetites improved and their complexions became healthier. These seventeen patients also showed mental improvement. They showed increased contact with reality. One patient who had been mute for more than ten years, and who had failed to react to sulfur in oil and to sodium amytal, was enabled to speak. The others became more accessible and spoke more freely. Urinary incontinence was corrected in four patients. Some of the patients who were previously idle were induced to occupy themselves. A patient with profound melancholia and one with depressive stupor recovered, two with chronic melancholia were very much improved, two with resistive stupor showed slight improvement and are still under treatment, and one with obsessional neurosis improved and is still under treatment. One female patient suffering from schizophrenia complicated by epilepsy was treated. Seizures were easily induced with a dose of 5 cc., and she quickly regained consciousness. Owing to the simplicity and safety of metrazol therapy it is likely to supersede insulin shock therapy.

### Journal of Tropical Medicine and Hygiene, London

41: 197-212 (June 15) 1938

- Role of Viscerotomy in Diagnosis and Control of Yellow Fever. B. J. Lloyd.—p. 197.  
Trypanosomiasis Gambiense: Some Observations in Uganda, and Their Bearing on Prophylaxis. A. A. F. Brown.—p. 200.

### Lancet, London

1: 1317-1372 (June 11) 1938

- The Pursuit of Shadows. W. Langdon-Brown.—p. 1317.  
\*Treatment of Splenic Anemia and Banti's Syndrome. L. Howells.—p. 1320.  
\*Cyclohexyl-Ethyl-Triazol in Convulsion Treatment of Schizophrenia. W. Mayer-Gross and A. Walk.—p. 1324.  
Primary Tumors of Lacrimal Sac. G. G. Penman and E. Wolff.—p. 1325.  
Pregnancy and Oleothorax. J. G. Scadding.—p. 1329.  
Congenital Isolated Dextrocardia Developing Auricular Flutter. H. Davis.—p. 1331.  
Globulin Test for Cerebrospinal Fluid. K. O. Newman.—p. 1333.

**Splenic Anemia and Banti's Syndrome.**—Howells reviews the results of treatment in ninety-four cases diagnosed as splenic anemia or Banti's syndrome. Of these fifty-one were treated by splenectomy and forty-three medically, the choice of treatment being largely a matter of opinion. The medical treatment consisted of symptomatic measures for anemia, indigestion, pain, hematemesis and so on. Splenectomy does not seem to improve the expectation of life or prevent the progress of cirrhosis of the liver or of the anemia or the occurrence of hematemesis, and therefore there is no logical reason for retaining it as a routine. It may be justifiable to remove a spleen that is causing severe pain, but the operative risks must be considered. Iron appears to be of value whether the patients have undergone splenectomy or not, but the anemia is often unaffected by any form of treatment. The expectation of life in the different stages of the illness is little altered by splenectomy. The results appear to be slightly more favorable in the group of medical cases but this may be due to the operative mortality after splenectomy. Of the fifty-one patients on whom splenectomy was performed, nine died as a result of the operation, and in the other seventeen fatal cases cirrhosis of the liver was the cause of death in six cases, hematemesis in four, peritonitis in two, intercurrent disease in two, pyemia in one and anemia in one. In one case the cause was not clear. Of the twenty-one patients receiving medical treatment who died, cirrhosis of the liver was the cause of death in ten cases, hematemesis in nine and acute thrombosis of the portal and mesenteric veins in one, and in one case the cause was not discovered. The final results, based on the progress of both the hepatic disease and of the anemia in the two groups of patients, show that twenty-two of the fifty-one splenectomized patients and twenty of the forty-three medically treated patients improved.

**Cyclohexyl-Ethyl-Triazol and Schizophrenia.**—Mayer-Gross and Walk used a 5 per cent solution of cyclohexyl-ethyl-triazol for the induction of convulsions in the treatment of thirty-three cases of schizophrenia. Behrens, Dinkler and Woenckhaus found the compound to have advantages over the 25 per cent solution of pyridine betacarboxylic acid diethylamine



and metrazol. Convulsions were readily induced by quantities of the compound ranging from 0.7 to 2.5 cc. given intravenously. The majority of patients require between 1.2 and 1.8 cc. The type of convulsion produced is, with correct dosage, the full major epileptic fit. The exertion of triazol appears to be somewhat slower than that of metrazol; consequently the injection need not be given with any special rapidity, though the smallness of the dose makes it easy to do so. Should the amount given fail to induce a fit, a supplementary dose of from one-third to one-half the original dose is sufficient to bring on the fit if given up to two minutes after the original injection. Sclerosis of the veins has not occurred in any case. When given intramuscularly, approximately twice the intravenous dose is required, though there are individual variations and it is best to begin with a somewhat smaller dose. After the fit, recovery is usually rapid, but there may be a short period of restlessness, as with metrazol. Routine premedication with  $\frac{1}{100}$  grain (0.00065 Gm.) of atropine, given one hour before the treatment, completely abolishes vomiting. Amnesia for the effect of the drug appears to be more complete than with metrazol.

### Medical Journal of Australia, Sydney

1: 985-1042 (June 11) 1938

- Anesthesia in Pulmonary Tuberculosis. G. Brown.—p. 985.  
Experiences with "Pentothal Sodium." G. Brown and G. Troup.—p. 989.  
Cyclopropane Anesthesia. S. V. Marshall and H. J. Daly.—p. 990.

1: 1043-1076 (June 18) 1938

- Spinal Arachnoiditis. E. G. Robertson.—p. 1043.  
The Infant Hercules Type of Adrenogenital Syndrome. L. Dods and R. Jeremy.—p. 1047.  
Method of Instilling Zinc Sulfate Solutions in Anterior Poliomyelitis. E. Gutteridge.—p. 1050.  
Results of Investigation of Reflex Epilepsy. I. M. Allen.—p. 1052.  
The Unsatisfactory Child. L. Male.—p. 1055.  
Persistent Benign Meningococcal Bacteremia: Report of Case. C. G. Lambie.—p. 1058.

### South African Medical Journal, Cape Town

12: 381-416 (June 11) 1938

- Treatment of Patients Before and After Operation. P. R. Michael.—p. 383.  
Electrical Aids for Hearing. F. G. Cawston.—p. 387.  
Transplantation of Ureters in Gynecologic Practice. P. Connan.—p. 389.

### Kitasato Archives of Experimental Medicine, Tokyo

15: 101-198 (April) 1938

- \*Treatment of Epidemic Encephalitis by Intraspinal Injection of Normal Serum. T. So.—p. 101.  
Summary of Experimental Studies on Bacterial Control in Etiology of Dental Caries. T. Okumura.—p. 124.  
Filtration Experiments of Virus of Endemic Typhus. S. Kasahara, S. Yoshida and Y. Okamoto.—p. 143.  
Serologic Grouping and Typing of Hemolytic Streptococci Isolated in Tokyo: II. T. Kodama, M. Ozaki, S. Nishiyama and Y. Chiku.—p. 162.  
Experimental Studies on Animals Concerning Leprosy, Report IX: Inoculation Tests with Human Leprosy, Part II. Y. Watanabe.—p. 179.

**Treatment of Epidemic Encephalitis by Normal Serum.**—Eleven patients with epidemic encephalitis were treated by So with serum of normal persons intraspinally. Serums were obtained from four healthy members of the patients' families and three normal men in the laboratory. These serums were not inactivated nor was a disinfectant added. Serums were never used if they were older than three days. The serums were kept in the ice box. The quantity of serum used was from 3 to 8 cc., and it was introduced slowly into the spinal cavity by lumbar puncture. Before the serum was administered a narcotic was injected, as the injection of the serum occasionally caused temporary stimulating symptoms. The most remarkable thing about the treatment is the prompt lowering of the temperature of the body (from several hours to twenty-four hours) and the rapid recovery of consciousness. A larger quantity of serum appears to be more effective than a smaller dose, especially in severe cases. Even in advanced cases the administration of normal serum produces a rapid fall of temperature. There appeared to be no difference in the effectiveness of the serum, whether it was taken from blood relatives or otherwise.

### Annales de Dermatologie et de Syphiligraphie, Paris

9: 465-544 (June) 1938

- \*Cholesterolemia in Psoriasis. J. Gaté, G. Chaniel, A. Vallet and P. Humbert.—p. 465.  
Production of Artificial Argyria in Animals. J. Lenartowicz and E. Jalowy.—p. 483.  
Traumatic Marginal Alopecia. H. Ribeiro.—p. 495.

**Cholesterolemia in Psoriasis.**—Gaté and his associates conducted investigations in order to verify the theory according to which disturbances in the lipid metabolism are the cause of psoriasis. They first cite the different clinical factors that have been advanced in favor of this theory, such as that most patients with psoriasis are well nourished, that the incidence of psoriasis decreased in Germany during the war when the fat content of the diet was low, and that the scales of psoriasis have an abnormally high fat content. Further, they cite biochemical and therapeutic factors in favor of this theory and mention authors who studied the cholesterol content of the blood and the therapeutic efficacy of diets with a low fat content. They studied the cholesterol content of the blood in thirty-six cases of psoriasis at the time of the severest stage of the eruption and also, when possible, after the attack. In some of their patients they employed a diet with a low fat content, but a strict enforcement proved difficult and so there were only a few rare cases in which they used this dietetic treatment to the exclusion of all others. They excluded all foods with fat content of more than 30 per cent and included only limited quantities of the foods with a fat content between 3 and 12 per cent. They give a list of the foods that are prohibited and of the foods that are permitted. The diet made up of the latter foods was sufficiently varied and palatable. Contrary to the observations of other investigators, the loss of weight was slight in the authors' cases. The authors say that the cholesterol content of the blood was normal or below normal in 30 per cent of the cases, whereas in all other cases it was either above normal or at the upper limits of normality. Moreover, tests made during the time of improvement or cure revealed in the majority of cases a considerable reduction in the cholesterol content. However, there was one case in which a clinical amelioration was accompanied by a slight augmentation in the cholesterolemia. The therapeutic results of the fat deficient diet seem interesting in spite of their small number. The authors noted one failure, but in four other cases they obtained a considerable amelioration either with the diet alone or together with local treatments. They think that the dietetic treatment is indicated in association with the customary treatments, not only in order to promote their action, but especially in order to prevent recurrences.

### Bruxelles-Médical, Brussels

18: 1119-1155 (June 26) 1938

- Leprosy in Brazil and Its Prophylaxis. H. C. De Souza-Araujo.—p. 1119.  
\*Treatment of Secondary Infectious Rheumatism by Azo and Nonazo Derivatives of Sulfanilamide. M. Ferond.—p. 1125.

**Treatment of Rheumatism by Derivatives of Sulfanilamide.**—Secondary infectious rheumatism, according to Ferond, develops in the course of an infection and involves a lesser number of articulations than does acute rheumatism. The articular swellings are usually less mobile than in Bouillaud's disease and subside less readily. Ankylosis and considerable deformities and tendinous retractions and even suppuration occur more frequently. The capsules and periarticular bursae are always involved. Sometimes they are alone involved and the articulation proper is unimpaired. In the majority of cases of secondary infectious rheumatism it is the actual presence of the infectious organism in situ which produces the articular manifestations. The treatment with salicylate has little or no effect in this form of rheumatism. Articular puncture often permits the detection of streptococci, staphylococci, pneumococci, gonococci and so on. From the immense group of secondary infectious rheumatism some forms stand out because of their frequency, because they have been studied more thoroughly or because an efficacious treatment is available for them. In this connection the author cites gonorrheal rheumatism, acute syphilitic rheumatism and the rheumatisms that develop after scarlet fever, erysipelas, puerperal infection, pneumonia, typhoid, influ-

enza and cerebrospinal meningitis. Until recent years the medicinal treatment was not effective against the majority of the micro-organisms responsible for the aforementioned forms of secondary infectious rheumatism, but the discovery and the therapeutic employment of a series of chemical derivatives that are efficacious against gonococci, staphylococci, streptococci, pneumococci, meningococci and others seem to make possible practically a specific chemotherapy of a large number of cases of secondary infectious rheumatism. The author gives the formulas of the new preparations, cites their action on different pathogenic organisms and discusses their experimental toxicity and their absorption, elimination and mode of action. In evaluating their clinical activity and their therapeutic value in acute secondary infectious rheumatism he emphasizes that these medicaments occasionally seem to give rise to complications. However, he thinks that these substances, when employed promptly in the treatment of secondary infectious rheumatism, will prove valuable in preventing late complications.

### Presse Médicale, Paris

46: 969-983 (June 22) 1938

Arterial Hypertension by Renal Ischemia. Pasteur Valléry-Radot, S. Blondin, R. Israel and C. Cachin.—p. 969.

\*Pyretotherapy of Pure Lipoid Nephrosis. R. Clément.—p. 971.

Mental Aspects of Acute Syphilitic Meningitis. A. Donnadieu.—p. 974.

Cold Abscess of the Thyroid Gland. A. Uraz.—p. 977.

**Pyretotherapy of Lipoid Nephrosis.**—Clément says that several observers have noticed that, instead of becoming exacerbated by intercurrent febrile diseases, lipid nephrosis frequently is improved by them. He was able to collect thirty-nine cases in which an existing lipid nephrosis was improved after an intercurrent febrile disease. The appearance of the fever is often accompanied at first by an exacerbation of the clinical symptoms such as reduction in the urinary output and augmentation of the albuminuria, of the edemas and of the serous effusions. After that the paradoxical clinical amelioration appears: diuresis sets in; the albuminuria decreases rapidly and may disappear; the edemas and the effusions become absorbed, and the general condition improves. The diseases that have had a favorable effect on the development of lipid nephrosis vary greatly. The only factor they have in common is that they produce a high fever for a period of several days. In the material investigated by the author, measles, either alone or combined with other febrile disorders, was the most frequent. Other febrile disorders that were found to influence lipid nephrosis were various types of pneumonia, bronchitis, rhinopharyngitis, peritonitis, erysipelas, otomastoiditis sinusitis, typhoid and so on. The favorable effect exerted by such intercurrent febrile diseases on the evolution of lipid nephrosis has led to trials with pyretotherapy. The author tried this treatment first in 1936, but subsequent bibliographic investigations revealed to him that others had tried it as early as 1931 and 1933. He gives a detailed clinical history of a boy, aged 15, who had a typical lipid nephrosis and in whom pyretotherapy produced a clinical and humoral cure which so far has persisted for eighteen months. The attacks of fever were elicited at first by injections of sulfured oil and later with an antityphoid vaccine. This and other cases corroborate the ameliorations produced in lipid nephrosis by intercurrent febrile diseases. In summarizing the observations on lipid nephrosis in the course of spontaneous or provoked fever, the author says that the existence of a nephritic element in lipid nephrosis makes it necessary to be extremely reserved in the use of pyretotherapy. In several cases in which the urine contained casts and leukocytes and in which the blood showed a certain degree of azotemia, the intercurrent febrile disease did not have favorable effects on the lipid nephrosis. The existence of these symptoms may be a contraindication to pyretotherapy. Moreover, even in pure lipid nephrosis the disorders accompanying the hyperthermia must be taken into consideration. The daily injection of progressive doses may represent too much of a load for the diseased organism. On the other hand, a short thermic attack provokes only a short phase of aggravation, which is followed by an improvement. It seems best to employ the induced fever discontinuously, at intervals of six or ten days, for example. The choice of the pyretogenic agent seems to be of little importance. The use of milk, casein, sulfur preparations, bacterial

vaccines and physical therapeutic procedures have all been known to be followed by success as well as by failure. The results obtained are not exactly in proportion to the height of the fever. Nevertheless it seems necessary that the thermic attack be of considerable intensity. The action mechanism of the fever is still hypothetical. The author hopes that pyretotherapy will greatly improve the prognosis of lipid nephrosis.

46: 985-1032 (June 25) 1938. Partial Index

Morphology of Hyphomycosis of Feet. T. de Verebely.—p. 989.

Thyroid Gland and Pernicious Anemia. G. Mansfeld.—p. 993.

\*Therapeutic Properties of Vitamins. A. Szent-Györgyi.—p. 995.

New Experimental Researches on Obesity. A. de Beznak.—p. 996.

Lichen Moniliformis. L. Nékam.—p. 1000.

"Whooping Cough Lung" and Its Radiologic Aspects. R. Debré, M.

Lamy, M. Mignon and J.-J. Welti.—p. 1011.

\*Histologic Lesions of Gonococccic Arthritis. H. Mondor and Mlle.

Gauthier-Villars.—p. 1015.

Granulocellular Rhabdomyoma of Tongue. J. Ducuing and Bassal.—p. 1018.

**Therapeutic Properties of Vitamins.**—Szent-Györgyi shows that certain misconceptions exist with regard to the vitamin C requirements of the organism. Zilva, he says, in experiments on guinea-pigs, detected that from 1.5 to 2 mg. of vitamin C maintains the guinea pig in an apparently healthy state but that a quantity about ten times greater is required to saturate the organism of the animal with vitamin C. Zilva thinks that this enormous quantity of vitamin C is entirely unnecessary, since with about 2 mg. of vitamin C the guinea pigs seem to be in perfect health. To this opinion Szent-Györgyi raises the objection that guinea pigs living in cages cannot be compared with those living in their natural habitat. He admits that 20 mg. of vitamin C seems an enormous amount but shows that guinea pigs which live in their natural surroundings in the tropics ingest approximately that amount with their daily food. He is of the opinion that the quantity of vitamin C which protects the organism against scurvy is not necessarily sufficient, because scurvy is not the first sign of vitamin C deficiency but rather a premortal, late symptom. A slight vitamin C deficiency causes no definite symptoms, so that the organism appears healthy. Man living under conditions provided under civilization is subject to a partial vitamin deficiency. This partial avitaminosis and the diminution of the power of resistance, which it involves, may lead to various disorders. On the other hand, vitamin C seems to produce favorable results in febrile diseases, during which the organism's requirements for vitamin C seem to grow. In this connection the author suggests that if diseases like pneumonia and nephritis are favorably influenced or even cured by vitamin C, it appears likely that they might have been prevented if the patient had absorbed the required amount of vitamin C.

**Histologic Lesions of Gonococccic Arthritis.**—Mondor and Gauthier-Villars, after reviewing the results which they obtained in biopsies in cases of gonococccic arthritis in the years 1926 and 1928, cite observations by other investigators. Since 1928 their biopsy material has greatly increased, so that now it includes forty-eight synovial biopsies (articular and tendinous), fifteen osseous biopsies on the articular surfaces and twenty-one calcaneal sections. Before evaluating the observations on this material, the authors raise the question whether the observed reactions are elicited only by the organism in question or whether they are determined also by the tissues in which they evolve. Since in the cases of arthritis treated by arthrotoomy biopsy is still not widely practiced, the authors lack sufficient material for comparison with other forms of arthritis. Moreover, in the same patient it is possible to evaluate the impairment of the synovial membrane, of the bone, of the periosteum, of the cartilage and of the periarticular tissues only relative to the resected pieces, which do not often represent stabilized forms. Finally, the age of the lesions must be taken into consideration. In evaluating their histologic observations, the authors first discuss twenty-two synovial biopsies which they made within the first two months of the existence of the disease. In eighteen of these twenty-two cases they were able to detect gonococci in the sections, whereas this was possible in only one of the twenty-six cases in which the process was older. In attempting to draw general conclusions from their histologic observations, the authors say that they were unable to find lesions that were

frankly specific for gonococcal arthritis. They think that it is impossible to base a definite etiologic diagnosis on the inspection of histologic sections, but the absence of necrosis, the precocity of the organization of the lesions and the richness of the inflammatory exudates in plasmocytes appear to them as suggestive of a gonococcal process. However, they believe that on the basis of twelve years of observation they are justified in affirming that the synovial membrane is the point of predilection of the lesions of acute arthritis; it shelters the gonococcus even in the cases in which the periarticular phenomenon seems to be the most active. Gonococci are detectable in eight out of ten cases if the examination is made during the first eight weeks. The bone is always more or less involved in the course of acute arthritis, and the term acute osteo-arthritis, which has been suggested by the authors, corresponds to an anatomic reality. Pathologic dislocations are frequent; there are osseous as well as capsular lesions which cause them. The anatomic changes that are the basis of the gonorrheal talalgias consist in a diffuse calcaneal osteoperiostitis, which far exceeds the roentgenologically visible exostosis.

### Schweizerische medizinische Wochenschrift, Basel

68: 753-776 (July 2) 1938. Partial Index

Remarks on Last Year's Epidemic of Poliomyelitis in Basel. E. Wieland.—p. 753.

Formerly Unknown Hereditary Disease of Eyes (Hereditary Hyaloid Degeneration of Retina). H. Wagner.—p. 761.

\*Influence of Hypnosis on Pulse: Apparatus for Automatic Uninterrupted Registration of Blood Pressure. B. Stokvis.—p. 764.

Silent Early Period of Syphilis. K. Wolpert.—p. 767.

**Influence of Hypnosis on Pulse.**—Stokvis says that in considering the influence of hypnosis on the pulse action it is necessary to differentiate between the influence of the hypnosis as such and that which is exerted by the nature of the hypnotic suggestions. In order to determine the influence of hypnosis on the pulse, he subjected ten healthy persons and ten persons with essential hypertension repeatedly to hypnosis. The figures given in the tables reporting the results are the mean averages of repeated tests. The feeling of the pulse, which is a disturbing factor in hypnosis, was unnecessary, because the tensograph was used. This is an apparatus for the continuous automatic registration of the systolic and diastolic blood pressure which indicates every pulse beat by a ticking sound. Discussing the influence of hypnosis as such, the author says that in healthy persons the pulse frequency decreases under the influence of hypnosis as such. The same statement applies *mutatis mutandis* to persons with hypertension. In normal persons the suggestion of rest under hypnosis usually causes a greater decrease in the pulse frequency than does hypnosis as such. The change in the pulse frequency is greatest if fear is suggested and least if joy is suggested. The suggestions during hypnosis of anger, pain and work have approximately the same effect on the pulse frequency. In patients with hypertension it is the same as in normal persons. The fact that during the hypnotic state as such the pulse frequency usually decreases is in accordance with the fact that the systolic pressure, which is dependent on the cardiac activity, decreases more during hypnosis than does the diastolic pressure, which is influenced chiefly by the tone of the vascular wall. If cardiac palpitation is suggested during the hypnotic state, neither the blood pressure nor the pulse frequency is changed. Thus it is impossible to increase the pulse frequency by the direct suggestion of an abnormal cardiac activity; to accomplish this, an emotional stimulus is required which influences the nervous system of the vessels.

### Gazzetta degli Ospedali e delle Cliniche, Milan

59: 529-556 (May 22) 1938

Splenectomy in Leukemia. A. Ferrata and A. Fieschi.—p. 531.

Correlative Behavior of Respiration, Pulse, Arterial Pressure and Morphologic Elements of Blood After Administration of Insulin. E. Frola.—p. 534.

\*Electrocardiographic and Morphologic Researches for Right or Left Localization of Ventricular Myocardial Lesions. F. Kienle.—p. 543.

**Localization of Myocardial Lesions.**—Kienle states that lowering of the ST segment of the electrocardiogram taken at the extremities at the first or second derivation indicates predominant lesions of the left ventricle, whereas the same phe-

nomenon in the electrocardiograms taken in the second and third derivations shows predominant lesions of the right ventricle. His statement is supported by the results of macroscopic and microscopic studies of the heart of several patients who showed these electrocardiographic alterations for some months before death. Necropsy confirmed the diagnosis as to the presence of myocardial lesions at either the right or the left ventricle in all cases. In a case of subacute pulmonary embolism there was a lowering of the ST segment of the electrocardiogram in the third derivation. The curve was similar to that of infarct of the posterior wall. A large number of foci of necrosis of the right ventricle could be seen on microscopic study of the heart.

### Ginecologia, Turin

4: 333-402 (June) 1938. Partial Index

Oxalemia and Average Amount of Oxalic Acid in Human Placenta in Relation to Exogenous Factor Administered at End of Normal Pregnancy. F. Rigazzi.—p. 333.

\*Spinal Anesthesia in Cesarean Section. A. Duca.—p. 364.

Morphologic Modifications of Blood After Epinephrine Injection in Pregnancy and Puerperium. T. M. Caffaratto.—p. 378.

**Spinal Anesthesia in Cesarean Section.**—Duca points out the advantages of lumbar anesthesia in making a cesarean section. Cesarean section was indicated in seventy-five of eighty-six cases because of abnormalities of the pelvis. The remaining cases were of early rupture of the membranes, detachment of placenta normally inserted, central placenta praevia and eclampsia. Forty-nine patients were primiparas. The author administered 3 cc. of a 5 per cent solution of procaine hydrochloride with some epinephrine. The amount of spinal fluid removed was about 4 or 5 cc., and more than that but less than 10 cc. was removed in cases of increased pressure of the fluid. Lumbar anesthesia offers no danger or after-effects. The contraindications are large hemorrhages, acute shock, decompensated heart diseases, acute toxemia, hypotension in intestinal obstruction and septicemia with positive blood cultures. Lumbar anesthesia has various advantages, especially the speed of inducing it in about ten minutes without any previous preparation of the patient, the complete insensibility of the lower half of the body, relaxation of the abdominal muscles, lack of nausea and other abdominal disorders, and especially the hemostatic conditions of the operative field. The author reviews the theories of the enervation of the uterus and states that spinal anesthesia induces an energetic contraction of the uterus with consequent hemostasis during cesarean section.

### Radiologia Medica, Milan

25: 495-582 (June) 1938

Technic and Roentgen Anatomy of Temporal Pyramid. G. Bignami.—p. 495.

\*Roentgen Study of Spontaneous Fractures of Ribs in Pulmonary Tuberculosis. C. Sabbione.—p. 528.

Functional Factors in Roentgen Aspects of Normal Lung. A. Salotti.—p. 541.

Roentgen and Radium Therapy of Laryngeal Papilloma. E. Rosti.—p. 547.

**Spontaneous Fractures of Ribs in Pulmonary Tuberculosis.**—After examining the roentgenograms of the thorax in a group of 4,570 adult patients of both sexes who were suffering from pulmonary tuberculosis, Sabbione found spontaneous fractures of the ribs in nineteen. There was no history of trauma. The fracture was caused by coughing or sneezing. According to the author, spontaneous fractures of the ribs in the course of pulmonary tuberculosis are rare. They take place in adults over 40 or 50 years of age who are suffering from grave forms of pulmonary tuberculosis. The condition is more frequent in women than in men and takes place in either side. It is caused by osteoporotic atrophy which develops in the course of pulmonary tuberculosis from insufficient fixation of calcium by the bones. The diagnosis is made from the type of pain which is constant and intensified by coughing, sneezing and pressing of the rib during palpation. The fracture shows in the roentgenograms from fifteen to twenty days after it takes place, with the typical aspect of callus. Spontaneous fractures of the ribs evolve as fractures of any other type, with complete healing

in two or three months. They seem to have a prognostic significance. In all the cases seen by the author the general and pulmonary conditions rapidly grew worse after the occurrence of the fracture.

### Semana Médica, Buenos Aires

45: 1401-1456 (June 23) 1938. Partial Index

Tuberculosis of Knee Joint: Chutro's Synovectomy. R. L. Ferré, P. Esperne and J. L. Curutchet.—p. 1401.

\*Posttraumatic Parkinsonism. S. Chichilnisky.—p. 1420.

Factors of Success or Failure of Peridural Anesthesia. E. S. Sammartino.—p. 1429.

**Posttraumatic Parkinsonism.**—Chichilnisky discusses the etiologic role of cranial trauma in parkinsonism and reviews the literature on the subject. According to the author the existence of posttraumatic parkinsonism is proved. The diagnosis is made after verification of the following conditions: absence of any history of the patient having had encephalitis, presence of violent cranial trauma and, generally, of a period of incubation of the disease, progressive uninterrupted evolution of the disease without appearance of mental symptoms and a constitutional predisposition. Loss of consciousness is not necessary in cerebral concussion which may be demonstrated by other symptoms of shock. The period of incubation between trauma and first appearance of the symptoms generally varies from eight to ten months. In rare cases it may be either longer or nonexistent. The disease develops without any remission. The syndrome is caused by hemorrhagic lesions either at the optostriate nuclei or at the cortex of the frontal lobe. There is an evident correlation between posttraumatic parkinsonism and Pierre Marie's syndrome. The two syndromes generally coexist. From a medicolegal point of view the patients have a permanent total incapacity. Two cases are reported.

### Chirurg, Berlin

10: 377-408 (June 1) 1938

Arteriographic Demonstration of Vessels of Posterior Cranial Fossa. O. Sjöqvist.—p. 377.

Rare Form of Renal Adenoma. H. Meltzer.—p. 380.

\*Recurrence of Gallstones. G. Zopff.—p. 389.

Results with Resection in Gastric Duodenal Ulcers. E. Kirmann.—p. 397.

**Recurrence of Gallstones.**—According to Zopff, in the last three years 202 cholecystectomies were performed at the Heidelberg clinic. During the same period forty-five (18.5 per cent) patients were readmitted to the clinic because of recurrence of symptoms. The original operation was performed from six months to twelve years before. Only eleven had their original operation at the Heidelberg clinic. On reoperation a stone was found to be present in the extrahepatic bile passages in twenty-three (51 per cent), or 9.3 per cent of the total number of patients operated on during the same period. Inflammatory alterations were responsible for the symptoms in eleven (24.5 per cent). Eight patients presented mechanical disturbances either in the biliary tract or in the intestine. Dyskinesia was assumed to be the cause in three (6.7 per cent). Enlargement of the periportal lymph nodes was found to be the cause in two cases. Carcinoma at the hilus of the liver was observed in one. There were three types of inflammatory alterations: those of the bile passages, late abscesses, and inflammation of the head of the pancreas. The patients in whom the symptoms were due to inflammation of the bile passages responded well to conservative treatment, which consisted of the passage of the duodenal sound and flushing with 40 per cent magnesium sulfate. There were four instances of late abscesses which had developed in cases of neglected cholangitis. More than 50 per cent of recurrences were due to a stone. The author believes that most of the recurring stones are these overlooked at the time of the original operation, although he does not reject the possibility of formation of new stones in the extrahepatic bile passages. In proof of the latter contention, the author cites three cases in which stones were removed from the common bile duct and in which there was congenital absence of the gallbladder. The author likewise had seen two consecutive recurrences of stones in the common bile duct. He stresses Enderlen's advocacy of an early operation for gallstones. The stones may lie a long

time in the common duct without producing symptoms, though they prepare the ground for a recurrence after a cholecystectomy. Among 202 cholecystectomies, stones were removed from the bile passages in twenty-eight cases (13.9 per cent). Because of a definite increase in mortality when the choledochus is opened, roentgenologic investigation of the patency of the duct during the operation, as proposed by Mirrizzi, was adopted in the Heidelberg clinic. In addition, they have attempted to locate the stone by transillumination of the duct. The favorite seat of a recurring stone is the physiologic enlargement of the duct just above the sphincter of Oddi, giving rise to symptoms of a valve stone with or without involvement of the pancreas. The diagnosis of the presence of a stone in the common duct constitutes an indication for operation. Choledochotomy and the removal of the stone were considered sufficient in the presence of a patent duct. Drainage was practiced only in the presence of severe inflammation, icterus and white bile. The author considers systematic medical after-treatment an important prophylactic measure in preventing recurrence of symptoms.

### Klinische Wochenschrift, Berlin

17: 905-920 (June 25) 1938

\*Vitamin B<sub>1</sub> Content of Blood and Urine and Its Changes in Hyperthyroidism and in Cancer Cachexia. E. Schneider and A. Burger.—p. 905.

Important Diagnostic Phenomenon for Recognition of Open Ductus Arteriosus Botalli. H. Böhm.—p. 907.

New Method for Exact Demonstration of Contrast Mediums Containing Iodine and for Obtaining Information About Their Fate in the Organism. W. Lutz and H. Seyfried.—p. 908.

\*Rapid Bacteriologic Diagnosis of Diphtheria. W. Helmreich.—p. 910.

Hemoglobin Metabolism in Febrile Episodes of Schizophrenic Psychoses. K. F. Scheid.—p. 911.

Blood Picture During Uliron Therapy of Gonorrhea. H. Weber.—p. 915.

Carcinomatous Lymphangitis of Lungs. H. Hippe and K. Hähle.—p. 917.

**Vitamin B<sub>1</sub> Content of Blood and Urine.**—Of the three available methods for the quantitative determination of the vitamin B<sub>1</sub> content, Schneider and Burger used the thiochrome method of Jansen and the method of Prebluda and McCollum. They made tests on healthy persons, on patients with hyperthyroidism and on patients with cancer cachexia. They found that the daily elimination of vitamin B<sub>1</sub> in the urine of healthy persons fluctuates between 80 and 100 micrograms. The average vitamin B<sub>1</sub> content of the serum amounts to about 6.4 micrograms per hundred cubic centimeters. The percental urine value is slightly higher than the serum value and amounts to from 7 to 8 micrograms per hundred cubic centimeters. During hyperthyroidism the normal averages of the vitamin B<sub>1</sub> content may be doubled; that is, the vitamin B<sub>1</sub> elimination as well as the vitamin B<sub>1</sub> requirements run almost parallel to the increase in the metabolic rate, but it cannot be said that vitamin B<sub>1</sub> exerts an antagonistic action against the thyroid function. In patients with cancer, the increasing cachexia is accompanied by a decrease in the vitamin B<sub>1</sub> content as well as by an A and C hypovitaminosis. As the cachexia reaches severe degrees, the vitamin B<sub>1</sub> may completely disappear from the serum as well as from the urine. In this respect the behavior of vitamin B<sub>1</sub> is similar to that of vitamin C.

**Bacteriologic Diagnosis of Diphtheria.**—Helmreich points out that the Löffler serum as well as the indicator-tellurium plate of Clauber, the two methods most widely used for the bacteriologic diagnosis of diphtheria, have the disadvantage that at least from eight to twelve hours and frequently more time is required for the diagnosis of diphtheria. It was the author's aim to develop a culture medium that would make possible a more rapid diagnosis. He cites the guiding principles that he followed in his search for the new medium and says that after hundreds of trials he found a fluid of the following composition the most suitable culture medium: 3 cc. of beef serum, 1 cc. of a 1 per cent bouillon of dextrose and 2 cc. of a 1 per cent solution of sodium acetate. The sterile cotton tampons are immersed for a short time in this mixture and are immediately put back into the test tube. The adhering serum is coagulated by heating for a period of thirty minutes in a water bath of 80 or 90 C. Testing the reliability of this method in seventy-nine cases, the author found that in sixty-

four the diagnosis could be definitely established after from two to three hours; in six others the diagnosis was established after from three to five hours, in five after from five to eight hours and in the remaining four after from eight to twelve hours. Comparative tests with the Clauberg and Löffler methods revealed that neither of these methods established the diagnosis before at least five to eight hours had elapsed, and in the majority of cases these methods required from eight to sixteen hours. He says that the fluid mixture can be stored on ice for six weeks and that the prepared swabs may be kept for about two weeks, provided they are properly sealed. The described method of rapid bacteriologic diagnosis is especially suitable for public health centers. In new cases of suspected diphtheria this method should be used together with the Clauberg and Löffler methods.

### Münchener medizinische Wochenschrift, Munich

85:1017-1056 (July 8) 1938. Partial Index

Evaluation of Right and Left Types in Electrocardiogram with Leads from Extremities. H. von Pein, P. Papageorgiou and L. Tölken.—p. 1017.

\*Dangers of Intravenous Cholecystography. W. Lutz and H. Seyfried.—p. 1019.

Management of Placental Stage: How to Shorten It and Save Excessive Bleeding. G. Lehmann.—p. 1020.

\*Clinical Aspects of Thallium Poisoning. G. Brumm.—p. 1024.

Bismuth Therapy of Angina and Tonsillitis. F. Imhof.—p. 1028.

"Athermic" Effects of Short Waves. E. Hasché.—p. 1033.

Evaluation of Efficacy of Immunization Against Diphtheria. K. Hofmeier.—p. 1035.

**Dangers of Intravenous Cholecystography.**—Lutz and Seyfried report the clinical history of a patient who died following the injection of the contrast medium for intravenous cholecystography. The necropsy corroborated the assumption that the sudden death was caused by an acute failure of the coronary circulation. Sclerotic changes were detected on the coronary vessels, but an acute thrombosis or an infarct did not exist. The contrast medium cannot be said to have been at fault, because ampules from the same package had been used about the same time without ill effects. Although there is no definite proof that the intravenous administration of the contrast medium caused the fatal outcome (sudden heart failure may occur in coronary sclerosis without external influences), it is nevertheless probable that the concurrence had a causal basis and that the diagnostic intervention was the eliciting factor. On the basis of this observation, the authors conclude that intravenous cholecystography is contraindicated not only in hypertension and in hypotension but also in all cases in which there is the slightest suspicion of coronary insufficiency or in which a coronary spasm threatens.

**Thallium Poisoning.**—Brumm says that, whereas reports about industrial and medicinal poisoning with thallium preparations have become rare, there is a noticeable increase of reports on poisonings resulting from the use of thallium preparations with homicidal or suicidal intentions. The preparation that is most frequently responsible in the latter type of cases is a paste which is marketed as a rat poison and which contains 2 per cent of thallium sulfate. The author describes his observations in a case of acute thallium poisoning. The patient, a man aged 24, attempted suicide by taking two tubes of the aforementioned rat poison, or approximately 1.4 Gm. of thallium sulfate. The case is noteworthy because the patient ingested almost the maximal dose of thallium sulfate and because he developed practically all the symptoms that are characteristic for thallium poisoning: nephritis, formication in the hands and feet, pains in the legs, acute abdominal pains, headaches, loss of appetite, insomnia, severe thirst, loss of hair, mental depression alternating with euphoria, hyperkeratoses on the hands and feet, white transverse streaks on the nails and so on. In the tenth week after the poisoning the physical condition had greatly improved, but when the patient again gave indications of suicidal intentions he was transferred for observation to the clinic for nervous disorders. Later he could be discharged as cured. Following a review of the literature on thallium poisoning, the author says that during the early stage the differential diagnosis must consider tabes or polyneuritis caused by arsenic, lead, mercury or alcohol. The diagnosis can be definitely

decided by the demonstration of thallium in the urine or stool. Since the elimination of thallium is slow, this is possible even after weeks have elapsed since the poisoning. Discussing the treatment, the author says that injections of sodium thiosulfate have been recommended and that vitamin B<sub>1</sub> has been known to exert a favorable influence on the neuritic symptoms. In the reported case, both of these treatments were used. At first, three ampules of a vitamin B<sub>1</sub> preparation were given daily by intravenous injection. Later, smaller doses of it were given at longer intervals and by intramuscular injection. The intravenous injections of sodium thiosulfate (1 Gm. in 10 cc. of distilled water) were at first given daily, later twice weekly.

### Hospitalstidende, Copenhagen

81:293-320 (March 29) 1938

\*Heredity of Human Blood Group Factors. V. Friedenreich.—p. 293.

Vitamin C Balance in Patients with Hematemesis and Melena. S. Lazarus.—p. 309.

**Heredity of Human Blood Group Factors.**—Friedenreich states that systematic quantitative studies of the absorption ability in a larger number of A persons showed two sharply defined groups, one with marked binding ability and one with weaker ability, which are identical with Landsteiner's A<sub>1</sub> and A<sub>2</sub>. With Thomsen and Worsaae he showed that of the A<sub>1</sub> and A<sub>2</sub> characteristics each depends on its gene; A<sub>2</sub>, like A<sub>1</sub> and B, dominates over O but is dominated by A<sub>1</sub>. A<sub>2</sub> persons cannot have A<sub>1</sub> offspring except with an A<sub>1</sub> partner, while certain A<sub>1</sub> persons (genotypes A<sub>1</sub>, A<sub>2</sub>) may have A<sub>2</sub> offspring without an A<sub>1</sub> partner but cannot in such case have O children. Recently he has seen another, rare, A variety mainly characterized by reaction far weaker than that of A<sub>2</sub>; in some of the persons with this reaction the A characteristics could not be established by means of the ordinary factory serums. He has examined the families in seven cases, about 300 persons in all. The inheritance of this characteristic, designated as A<sub>3</sub>, is explained by the assumption of one more allelomorph gene, which dominates over O but is recessive toward both A<sub>1</sub> and A<sub>2</sub>. The complete system will thus comprise fifteen genotypes and eight phenotypes. An apparently parallel principle, the author asserts, occurs in the MN system. He cites Crome's case of deviation from the system and reports a personal case of M mother and N child. Repeated examination of the mother with selected serums, however, established a weak N reaction. She is consequently not a homozygote M but has an extraordinarily weak N factor, far beyond the hitherto known variation breadth of the N factor, and examination of the child's grandmother revealed a special hereditary variety. The genetic basis must be a special allelomorph gene called N<sub>3</sub>, analogous to A<sub>3</sub> in the ABO system and dominated by the usual N gene (called N<sub>1</sub>). Repeated examination of the partner in the case cited has disclosed the N<sub>3</sub> factor in the mother. The frequency of the characteristic is not yet known. These uncommon factors have a practical significance in that they may escape establishment and so lead to erroneous type determination. He considers it reasonable to assume that these subtypes are the expression of a number of mutations in a relatively unstable gene, like the well known phenomena from the animal and plant kingdoms.

81:549-576 (June 7) 1938

\*Myelomatosis: Four Cases. H. E. Nielsen.—p. 549.

Perforation of Lung in Patients with Pulmonary Tuberculosis: Character or Exudate? Diagnosis by Analysis of Pneumothorax Air. H. Harpøth and U. Gad.—p. 561.

**Myelomatosis.**—Nielsen says that in four cases of myelomatosis, all diagnosed within nine months, the clinical picture was dominated by pains localized in the affected bones. Roentgen and laboratory examinations contributed to the diagnosis and sternal puncture revealed the characteristic plasma cells of myelomatosis. In the two cases of hyperproteinemia and hyperglobulinemia and hypoglobulinemia there was abundant Bence Jones protein in the urine. In one case treatment with high voltage roentgen rays resulted in some improvement; in the other cases the treatment was without effect. In the terminal stage in all cases there was a moderate hypercalcemia, while the serum phosphate was normal. In two cases death occurred four and twelve months respectively after onset of the symptoms.



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## THE UNDERGRADUATE TEACHING OF OBSTETRICS

CHAIRMAN'S ADDRESS

E. D. PLASS, M.D.

IOWA CITY

During the past decade especially, public attention has been drawn to the high maternal mortality in this country, and many alleged contributory factors have been advanced. In certain quarters there has been a tendency to place a great part of the blame for the admittedly undesirable situation on those who are undertaking the undergraduate teaching of obstetrics. Much of this criticism has come from persons who are not now and never have been engaged in this type of instruction and who therefore do not appreciate the difficulty, in fact the practical impossibility, of providing truly adequate obstetric instruction in any medical school. It is my purpose to discuss several factors related to this problem and to offer a considered defense of the men now actually engaged in obstetric teaching.

Both the profession and the public have been reluctant to admit obstetrics to a position of parity with the other clinical disciplines, an attitude which is undoubtedly engendered by the inevitable fact that child-bearing is physiologic in the vast majority of cases and that skilled attendants are therefore rarely a medical necessity. The falsity of this argument should be obvious, since modern obstetrics is actually a field of preventive medicine, with the emphasis on avoidance of the serious complications of pregnancy and parturition—infection, hemorrhage and the toxemias—which are responsible for two thirds of all maternal deaths. This failure to adopt the principles of disease prevention is not limited to obstetrics, but there is no other field in which curative procedures should be less important.

Instruction in any clinical discipline involves didactic teaching to develop a concept of the physiologic aspects of a phenomenon or of the clinical picture of a disease, and practical contact with patients to emphasize the points previously stressed. It now seems apparent that a well rounded course in any medical subject must include both methods of approach, although there is still no general agreement as to the amount of each that may be desirable. Until early in this century purely didactic instruction alone was available, and many present-day practitioners had no actual contact with human distress and disease until after their graduation. It is of historical interest to note that in its early days this Association actually went on record as opposing

other than purely didactic instruction in obstetrics and that a former chairman of this section, in reminiscing on his early difficulties, narrated vividly his experience with a group of Philadelphia matrons who threatened to burn his maternity hospital because he was teaching his students the actual technic of delivery. That attitude has fortunately disappeared, and its disappearance has opened the way for the many educational experiments now in progress.

Generally speaking, it may be said that the didactic teaching of obstetrics in the medical schools of the country is as adequate as that of any other major clinical subject. Textbooks are well written and authoritative, and the instructional staffs are progressive, interested and alert. This point of view has been developed in the course of an eight year experience as examiner in obstetrics on the National Board of Medical Examiners. Assuming that the questions given in the clinical subjects are equally difficult and that the grading is equally strict, the percentages of nonpassing grades should be significant. Among about 2,300 candidates examined during the past five years, 8.6 per cent were failed in obstetrics, as against 7.4 per cent and 13.6 per cent in surgery and medicine, respectively. The recital of these figures does not imply that the teaching of surgery is superior or that of medicine inferior but merely stresses that obstetrics maintains a median position and is presumably as well taught as other clinical subjects. The failures were not evenly distributed among the graduates of the various medical schools represented, but no one institution was especially notable for its high percentages of successes or failures.

Stephen Rushmore,<sup>1</sup> secretary of the Massachusetts Board of Registration in Medicine, commented at some length on the written answers to the question "Give in detail your treatment of a patient in whom there appeared no sign of separation of the placenta twenty minutes after the birth of the child." Without indicating what type of answer might be acceptable, he recorded that 182 of 250 candidates failed. The situation described is one "with which any physician practicing obstetrics is likely to be very frequently confronted," but there is considerable doubt as to whether any group of trained obstetricians would agree on the treatment "in detail." Nevertheless, the commentator remarked "However excellent the teaching of obstetrics may be, in some respects, on this elementary problem, it has not been effective for this group of candidates" and then concluded "Perhaps more effective teaching of the fundamentals of practice is one of the lines along which progress will result in the saving of more maternal lives." It should be noted that in 1937 Massachusetts had a considerably higher percentage of failures

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<sup>1</sup> Rushmore, Stephen: A Note on the Teaching of Obstetrics, New England J. Med. 217:731 (Nov. 4) 1937.

at the state board examinations (42.1 per cent) than any other state and that 300 among the 520 candidates applying for registration were from unapproved schools.

The problem of practical training, which is also implicated in the question cited, is naturally the more difficult, and from the statistical approach it seems almost insoluble. Pregnancy and parturition are essentially physiologic in character, with the major life-threatening complications of such infrequent occurrence that only the larger hospital centers can have anything approaching an adequate experience. Even if all hospital deliveries in the country could be used for student teaching to the exclusion of any other group, each graduate would be only poorly prepared for handling other than the simpler clinical problems. In 1937 there were 932,912 births in all the hospitals in the United States, a clinical material which would have provided slightly less than 175 cases for each of the 5,377 graduates. This exclusive experience would have made these young physicians capable of conducting a normal labor safely but still unequal to handling the more infrequent and serious obstetric complications. The average student would have performed from twenty to fifty forceps deliveries, seven breech extractions, two podalic versions and three cesarean sections, certainly not sufficient to make him a capable operator. On the other hand, only one student in two would have managed a single case of placenta praevia or eclampsia, one in three a really difficult vaginal delivery, one in four a serious case of puerperal infection and one in every ten or twenty a ruptured uterus or a hydatidiform mole. Under such an arrangement, it is apparent that no one could be well trained. As a corollary, it is obvious that there is not sufficient clinical material to make each graduate a competent obstetric specialist. The Council on Medical Education and Hospitals has set a minimum of fifteen obstetric cases for each senior student as the goal of those schools which would maintain their approved status, and few graduates have more actual obstetric experience than this before graduation.

The teachers of obstetrics realize the futility of attempting to make obstetric specialists out of undergraduates, and yet their critics are, at least by implication, insisting that this should be an objective of the instructional staffs. No other medical subject is taught with so much attention to preparing the student for actual practice as is obstetrics, and yet the others are not subjected to so much adverse criticism. The surgical staff is not expected to provide practical experience in the performance of major operations or in the care of fractures and other serious traumatic lesions; in ophthalmology the student is frequently not even taught the principles of refraction; in otolaryngology he does not even remove tonsils, and in urology his experience is limited to catheterizations of the bladder and prostatic massage. Yet by inference these subjects are well taught, while obstetric teaching is condemned. Is it reasonable to expect that the medical schools can graduate men and women thoroughly trained in obstetrics but mere tyros in the other fields of practice?

The family physician has been the family accoucheur and this relationship has been carefully guarded, since it helps to keep the family under his medical wing and to preserve the desirable patient-physician relationship. Moreover, child-bearing is by tradition a function for the home and remains practically the only form of surgical experience now attempted outside hospital surroundings. The majority of the general practitioners

now assuming the obstetric care of the nation had only a meager didactic training and no clinical experience before entering practice, and yet the lay public accepted them and relied on them. The fact that they have done as well as they have is a real tribute to their intelligence and to their ability to learn through the hard knocks of inescapable necessity. Nevertheless, there must be some doubt as to whether the real emergencies are being handled in accordance with the best obstetric thought and practice. It is rare to find an older physician who has not delivered from one to three thousand women without "losing a single mother" and who is not skeptical about the validity of the maternal mortality statistics reported by the Bureau of Census. The old argument as to whether home delivery is actually safer than delivery in a hospital cannot be settled, for lack of adequate data, but there can be no doubt that the relatively infrequent obstetric emergencies cannot be handled satisfactorily and safely in the home.

The struggle to reduce maternal death rates, when viewed in terms of general practice, involves experiences so isolated that their significance may well be lost. Assuming that the practitioner has fifty obstetric cases annually, the chance is that he will observe only one truly serious complication each year and that he will not have more than one maternal death every four or five years. Such isolated experiences are not impressive and are soon forgotten. Moreover, their rarity prevents the physician from acquiring that knowledge of diagnosis and treatment which is so essential if these occasional patients are to be saved. Under prevailing conditions, the wonder is not that so many women die as a result of child-bearing but that so many are carried safely through the perils of procreation.

The general practitioner has in the past done well and is to be complimented, but there is some doubt as to whether the objectives of the present movement to save the lives of mothers can be entrusted entirely to his care. If one assumes the correctness of this discussion and admits the practical inability to provide adequate obstetric training for physicians who will enter general practice, it would seem doubtful that much further progress can be expected under the present system. The ray of hope in the situation would seem to emanate from the fact that increasingly large numbers of young men with excellent preliminary medical education are being trained in the larger teaching centers and are scattering widely over the country. Persons interested in these problems would be the last to suggest that all obstetric work be placed in the hands of the obstetric specialists, although many feel that some system should be developed which would make expert advice available for every pregnant and parturient woman in the country on the suggestion of the attending physician.

There are two real obstacles to such a program, and while neither would seem unsurmountable the solutions to be suggested involve considerable changes in medical thought. In the first place, consultation with the obstetric specialist invades to some extent the traditional patient-physician relationship, which still implies professional omniscience, and entails the risk that the patient may be so impressed by the consultant's personality or knowledge that she will seek him directly when she becomes pregnant again and the referring physician will lose a patient. If and when the practitioner comes to think first of the good of his patient and only secondarily of his local professional prestige, this difficulty will disappear and obstetric patients will

receive the best advice which the community affords, certainly the goal toward which the profession is striving and the desirability of which the public appreciates and understands. The second problem, involving the cost of such consultations for all difficult obstetric cases irrespective of financial status, presents entirely different angles. The obstetric consultant can hardly be expected to give his time and to expend his energies entirely without remuneration, and yet many patients cannot afford to pay even a modest fee. One suggestion which has been offered by certain groups implies that situations of this character may be the concern of some governmental agency and that nominal payments to both the referring physician and the consultant would be in order. It remains to be seen whether this is the proper solution, but there can be no doubt that some attention should be given to providing an answer, so that adequate obstetric care may be available to all women endangered by the more serious complications of child-bearing.

An attempt has been made to develop the thesis that didactic undergraduate obstetric teaching is on a par with instruction in the other medical clinical branches but that there is not the slightest chance for the clinical instruction of undergraduates to make them competent to handle those infrequent obstetric emergencies which contribute so materially to the scattered maternal deaths and maintain the national mortality rate incident to child-bearing. The more effective utilization of the trained and experienced obstetric specialists would seem logical but inevitably involves certain changes in medical thought which time alone can effect.

University Hospitals.

## HEALTH OF THE MIGRANT

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During the past few years there has been a mass interstate migration of individuals seeking manual labor, the most extensive and persistent migration of the white population that has occurred within the United States in modern times. Beginning in 1929, immediately following the economic crash that precipitated the era of depression, this flow of underprivileged migratory laborers from the Middle West to California has continued without interruption. It flared explosively following the drought years of 1933 to 1935 and assumed truly enormous proportions during the years 1936 and 1937. By no means has it stopped. Every month brings thousands of these migrants, most of whom travel by automobile, across the border lines of California.

In the last six months of 1935 no less than 57,017 migratory laborers entered the state, 90 per cent of whom were white. In 1936 they came in even greater numbers, and in 1937, according to the official records of the United States Farm Placement Service, 104,796 individuals seeking manual employment arrived at border checking stations, by automobile. Of these, more than 78,000 were from the nineteen drought states of the central and southern Middle West. In that year 59,077, or 57.4 per cent of the total number, came from six states, Oklahoma, Texas, Missouri, Kansas, Arkan-

sas and Arizona. From Oklahoma alone came 21,709 of these people and from Texas there came no less than 8,723. It is probable that many more entered by other means of transportation.

A total of 259,665 refugees was checked at border stations during the two and one-half years beginning at midyear of 1935, through 1936 and 1937, most of whom came from the drought states. The number coming from nineteen drought states in 1937 is shown in the accompanying table.

There are many causative factors in this mass movement of migrants from the Middle West, chief of which are:

1. Drought.
2. Floods.
3. Supplanting of manual labor by farm machinery.
4. Crop failures.
5. Low market prices of cotton.
6. Planting restrictions imposed by the federal government.

Since a large portion of these people were share croppers who cultivated small pieces of land and divided proceeds with land owners, they were not tied down to land ownership and, on the sudden appearance of an economic calamity, were free to make immediate departure from an unfavorable environment to search for a new source of income.

The common type of migrant that has entered California during the past two years is of native white stock, a young adult, married, with a family of several children who accompany him on his travels, all undernourished, of limited or no education, lean, brown, hardy and physically able to endure considerable hardship. In his native environment his diet, as well as that of his forebears, consisted chiefly of pork, cornmeal and potatoes with few green vegetables or fruits—little or no variety. For generations people on the isolated plains of this country have existed on such meager fare.

At the same time that unfavorable economic conditions arose in the Middle Western states, greatly increased acreages for the growing of cotton, vegetables and other products were developed in California. In fact, it is estimated that 30 per cent of the large cotton plantations of the United States are now located in California and that 60 per cent of the large-scale fruit and truck-garden ranches are in this state.

There is a definite need for seasonal agricultural labor in California, and the United States Department of Agriculture estimates that 200,000 laborers are needed to harvest the state's crops at the season's peak. The arrival of great numbers of migratory laborers does not coincide with the harvest period, however, and in spite of the fact that their services are needed urgently when crops have matured, between seasons they often constitute economic burdens on local communities. The supply and demand are not regulated for the benefit of either the growers or the harvest hands. This fact has resulted in unprecedented confusion and in physical suffering due to inadequate housing, floods and other conditions leading to physical discomfort and illness. The local communities and the state and federal agencies were totally unprepared for this explosive and unannounced invasion, but machinery was developed for providing relief, housing, food, medical and nursing care, services in child and maternal welfare, immunization against communicable diseases and other standard public health procedures.

To absorb into a commonwealth nearly 260,000 indigents within a space of thirty months, provide them

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with manual labor in season and out, feed those without funds, provide housing, medical care, nursing and general public health services would tax the resources and ingenuity of any government. Acting together, local, state and federal authorities have surmounted legal, financial and other obstacles and today, regardless of citizenship, legal residence, race or color, adequate provision is made for safeguarding the health of migrants and for providing health protection for local residents. Work is provided whenever and wherever possible, medical care and hospitalization are given, with doctors of medicine and hospitals receiving compensation for services rendered. Not all of these benefits came at once, but with the development of a definite plan a standard and workable program of action has become a reality.

With the influx of these hordes of people who establish camps along the back roads, on ditch banks and in deserted barnyards, living in tents, packing cases, shacks and tin can shelters it became apparent that a problem in public health and welfare had arrived. The

*Migrants from the Drought States*

Drought States	Single Men	Families	Totals
Arizona.....	1,045	9,568	10,613
Arkansas.....	660	6,572	7,232
Colorado.....	733	2,969	3,702
Idaho.....	497	1,515	2,012
Iowa.....	270	754	1,024
Kansas.....	658	3,796	4,454
Minnesota.....	233	475	708
Missouri.....	681	5,635	6,316
Montana.....	348	754	1,102
Nebraska.....	765	2,259	3,024
Nevada.....	308	615	923
New Mexico.....	263	2,417	2,680
North Dakota.....	171	663	834
Oklahoma.....	1,755	19,954	21,709
South Dakota.....	206	958	1,164
Texas.....	651	8,042	8,723
Utah.....	347	715	1,062
Wisconsin.....	110	251	361
Wyoming.....	153	506	659
Totals.....	9,914	68,418	78,332

California State Department of Public Health recognized this fact and local health officers became particularly aware of it, as did also growers of cotton, fruits and vegetables. A sincere attempt to provide suitable housing for these refugees was made by large numbers of landowners but their efforts were applicable to relatively few, because of the magnitude of the migration.

The California State Department of Public Health, in cooperation with the United States Public Health Service, for two years has carried on active field work in those rural areas of the state where migrants have located. Of first importance, it has been determined, is the provision of adequate food for these migratory families. By heritage they have become accustomed to a diet lacking both in quantity and in essential food elements. As a result, they brought with them in their migration the heritage of years of malnutrition and dietary habits which are not easily adaptable to the great variety of fruits and vegetables found in California. In a recent survey made by the Bureau of Child Hygiene, State Department of Public Health, in which was compared the physical defects in 1,000 migratory and 1,000 resident children in the same area, it was found that, with the exception of those diseases caused by malnutrition, such defects varied only slightly.

While very few cases of actual starvation have been found, the majority of the migratory children receive a diet low not only in calories but also in vitamins and protective minerals. This is due to two conditions: first, the economic status of the family is such that during the major portion of the year only the bare essentials can be provided, and, second, mothers are unused to preparing and using the large variety of vegetables and fruits which are obtainable in this state. To aid in remedying the second condition, nutritionists have been placed in the field to work with nurses and physicians of the state health department. They are holding classes and giving individual instructions to migratory mothers in the preparation and use of the foodstuffs readily obtainable. Also they are helping them plan for their families balanced dietaries that will come within their financial range. During the last six months, and especially during the flood periods of the past winter, the Department of Agriculture, through the Farm Security Administration, has provided food grants and excess commodities for distribution to these malnourished families. It is believed that through these aids the nutrition of the migrant has been much improved.

A motor truck equipped with x-ray apparatus, doctors and nurses is maintained by the state health department. Children of migrants are given tuberculin tests, and x-ray examinations are provided for reactors. Thousands of such children have been examined but, unexpectedly, the incidence of tuberculosis in children of migrants is found to be no greater than in children of local residents.

About three years ago the Resettlement Administration of the Department of Agriculture, later changed to the Farm Security Administration, began a camp building program to provide more adequate housing and sanitary facilities for these people. They are at present operating seven such camps in California. These provide wooden platforms on which to pitch tents, water supplies, facilities for garbage disposal and adequate sewerage systems. In some camps there are water-flushed toilets and shower baths, while in others pit privies of an acceptable type are used in place of water-flushed toilets. It was intended by the Farm Security Administration, at the beginning of its program, that these camps should not provide a permanent residence for all the migrants but should act rather as temporary accommodations for a small portion of the migratory population. It was intended that the gospel of adequate camp sanitation should be spread over as much of the population as possible. In line with this trend and with the help of local health departments a large number of the growers of the state have built new camps or reconditioned their existing camps to provide these facilities. In the central portion of the San Joaquin Valley large numbers of growers have not only equipped their camps for flush toilets, running water and garbage disposal facilities but have also built large numbers of one room houses for their employees. The trend has been to raise somewhat the standard of living of the migrant to accustom him to those sanitary accommodations that we regard as necessities.

The burden of hospital care and medical services soon became too great for any county to bear and such services were refused because of lack of legal residence. The Farm Security Administration and the California State Department of Public Health with the assistance

of the California Medical Association and the State Relief Administration organized, through funds provided by the federal government, the Agricultural Workers Health and Medical Association, a nonprofit corporation authorized under the laws of California, with three doctors of medicine serving on its board of directors. Through this association, patients who are cleared through field doctors and nurses under supervision of the state health department may be placed in private hospitals and receive private medical care at no cost to themselves. This plan is a distinct innovation and is the only one of its kind that is in operation within the United States. In the course of their regular field duties in public health service, such as provision of sanitation, communicable disease control and immunization, the doctors and nurses employed by the state or local health departments discover cases in which hospitalization and medical care are needed. Such patients have not acquired legal residence and are not eligible to admission to county hospitals. They are referred to the Agricultural Workers Health and Medical Association, which provides a list of private physicians whose services are available. From this list a practitioner of medicine is selected by the patient and, if necessary, a hospital of choice may be entered. Both hospital and physician are paid by the association, their fees being based on definite schedules approved by medical and hospital associations.

By this plan it is hoped that no migratory worker who is sick need go without medical care and, if needed, he may be provided with hospital and nursing services, without expense to himself. In this manner, local communities are relieved of an unfair financial burden and private physicians and hospitals are compensated for the essential services rendered by them.

There are no laws, federal or state, that would prevent the migration of any legal resident of any state into another commonwealth. California has received this army of migrants, and has provided for its health and welfare to the maximum of its ability. It expects the states of the Middle West to care for their own underprivileged citizens so far as possible and accepts the overflow with a feeling of responsibility. With federal assistance and with the cooperation of medical, welfare, education, relief and public health workers this gigantic task in the provision of aid for an army of the country's migratory workers can be completed and maintained. It means the amalgamation of a new type of citizen into the social structure of California and the development of a new consciousness of public responsibility in the solution of a national problem.

#### SUMMARY

1. In 1936 and 1937, approximately 100,000 individuals seeking manual labor entered California by automobile each year, nearly 260,000 having arrived in two and one-half years.

2. More than 57 per cent of these migratory laborers came from the Southern Middle Western states of Oklahoma, Texas, Arkansas, Missouri, Kansas and Arizona.

3. California, in cooperation with federal agencies, has controlled communicable diseases among these groups, no major epidemics having occurred.

4. Services included child and maternal hygiene, diagnosis of tuberculosis, public health nursing, educa-

tion in nutrition, including selection and preparation of proper foods, provision of housing facilities and general public health services.

5. Study of conditions among these laborers revealed their greatest need—that of education in the hygiene of proper living.

6. The amalgamation of this army of underprivileged people into the social life of California requires the coordinated efforts of social welfare, relief, medical, nursing, public health and administrative workers among local, state and federal agencies.

7. In public health administration there are no state border lines so far as migration is concerned and no direct effort can be made forcibly to bar entrance of migrants into California.

8. In administering public activities to control these migrant groups, full recognition, first of all, was given to their status as human beings and, with public health as a driving force, provision was made not for prevention of disease alone but for medical and nursing care, relief and housing facilities.

313 State Building.

#### ABSTRACT OF DISCUSSION

DR. MYRNIE A. GIFFORD, Bakersfield, Calif.: The health problems of the migrant are largely those resulting from an inability to earn sufficient income to pay for adequate housing, food and sanitation. The feeling of insecurity resulting from the unsteadiness of available work in agricultural crops causes many functional body complaints, which are in reality the body's reactions to the fear under which many of the workers live. The Special Senate Committee to Investigate Unemployment and Relief found that the average earnings of the agricultural worker families in eleven representative counties was \$265 a year and that they were not indigents, because less than 2 per cent of their average incomes came from relief. The cost of a minimum adequate food supply for a family of five at \$6 a week for fifty-two weeks amounts to \$312 a year. This provides a meager amount of food. The minimum estimated cost to these families for traveling in getting from one job to another is \$125 for gas and oil. One wonders how they manage as well as they do. These figures explain why they live below the general subsistence living standard. Four times the number of agricultural workers are needed in harvesting seasons in California as are needed during the slack periods. Apparently there was not more tuberculosis, syphilis or other communicable disease among the migrant workers and their families than in the resident population of Kern County in 1937. There has been a significant relationship between the increase in the cotton industry in Kern County and the increase in the migrant population as well as the increase in the infant mortality in Kern County and admissions to the Kern General Hospital Service.

DR. A. T. McCORMACK, Louisville, Ky.: I have never heard a report which showed more effectively the usefulness of modern science in the development and preservation of modern civilization. The report raises a challenge to every one of us. Why did these migrant workers come to California undernourished? They were undernourished back home. Exactly the same problems surrounded them in the cabins they left as surround them now in the camps at which they have arrived. We did nothing about it there and I am wondering why. The situation, it seems to me, constitutes a challenge to the rest of us to do something about this class of people. We have them in my state and you have them in yours. The only difference between Dr. Dickie's case and ours is that Dr. Dickie knows the situation.

DR. MARY C. BALDWIN, Riverside, Calif.: I represent a slightly different element in this discussion from the majority of this section. I represent the private practitioners, and I was recently appointed to the county board of public welfare



in Riverside County. In a recent tour that we made of the county to look into welfare situations, we had the pleasure of visiting one of the federal camps that Dr. Dickie has described. The nurse on the job told us of the conditions there with some 800 inhabitants in the camp on the day we visited it. It was immaculately clean. It was an interesting experiment in giving these people, for the first time in their lives, probably, a chance to have a bath under a shower. The nurse was doing a tremendous piece of health education work. She had literature in a little waiting room on all the subjects we want people to know about: syphilis, maternal health, all that sort of thing, and she said the publications were being avidly read. Dr. Gifford's point about their apprehension is well taken. There they have houses that are kept clean and an electric washing machine to every forty families. I have just one plea to leave with you from the standpoint of a private practitioner. We see these people in our offices as private patients. We wish more could be done for them. We wish that more active communication could be established between your group and our group. We could do a lot to help you and you could do a lot to help us, and we are anxious to be of every help that is possible. I think Riverside County is the front door for these migrants; most of them come in through Blythe. I wish we might have a more active feeling of leadership from your group. Our group is really very willing to help.

DR. PETER COHEN, Santa Maria, Calif.: All of us doing any kind of public health work have come in contact with this problem in California. In the northern end of Santa Barbara County there is a large acreage of peas, and in the early spring months we are invaded by a horde of people to pick peas. This past season was an unfortunate one, at least at the beginning, for the pea crop. As the result of weather conditions, the peas were not quite ready for picking when the migrant workers came in and we had several hundred on our hands for some time before work was available. These people were in our county during March and April, and during that time a number of persons from this group were admitted to the local county hospital in the northern end of the county. During those two months 20 per cent of the admissions were from this migratory group and that included cases of smallpox, typhoid and some of the other communicable diseases as well as fractures. Incidentally there were two cases of smallpox, which were the first cases that we have had in Santa Barbara County for many years. In connection with the tuberculosis mobile unit, we had occasion to make use of those facilities too. Eighty-seven persons in the camps were examined by the mobile unit and four active cases of tuberculosis were found, which I think is much higher than has been found in other camps. There was one incipient case, one moderately advanced, and two far advanced. It is gratifying to know that this state has taken such a forward step in taking care of these people, who are attempting to better their lot, and I think California has certainly shown the way.

DR. W. M. DICKIE, Berkeley, Calif.: I should like to impress on everybody that practically all these people are old American stock and to a large extent they are replacing our foreign laborers. Another thing, in our work we have done 83,000 typhoid vaccinations and have vaccinated thousands of these people for smallpox. We intend, as long as they are moving around the state, that we shall continue our immunization program not only for their protection but for the protection of the people of the state as a whole.

**Sanitation in Rome in the Second Century.**—Lanciani gives us a vivid picture of the sanitation of Rome in the second century, when the city had 800,000 inhabitants. The drinking water was contaminated, the sewers were clogged, and the burial of the poor was in great public pits along with the refuse and garbage of the inhabitants. He calculated that one pit, uncovered after two thousand years, must have contained 6,400 bodies, the odor from which was "still a horrible stench."—Hurd-Mead, Kate Campbell: *A History of Women in Medicine*, Haddam, Conn., the Haddam Press, 1938.

## AN EXPERIMENTAL STUDY OF THE BEHAVIOR OF SULFANILAMIDE

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The obstetrician and gynecologist is rarely confronted with more serious infections than those caused by the gonococcus and the hemolytic streptococcus. Since its introduction in 1935, sulfanilamide<sup>1</sup> has been used in the treatment of these infections, but not always with favorable results and sometimes with untoward consequences. In sepsis due to the hemolytic streptococcus, the death rate is so high that drastic though hazardous therapy is sometimes justifiable. Gonococcal infection, although frequently associated with serious or incapacitating complications, rarely causes death; so until further studies have been made, routine use of this therapy which may produce dangerous reactions is unwarranted.

Some time ago this investigation was undertaken in order to determine the efficacy of sulfanilamide therapy

TABLE 1.—Time Required for Smears and Cultures to Become Negative

Patients	Number of Days Required for		Difference in Days for Any One
	Negative Smears	Negative Cultures	
1-10	0-35	8-35	0-8
11	14	50	36
12	5	50	51

\* Positive smear was never obtained.

on gonorrhea of the female. The treatment of gynecologic and obstetric patients presented certain problems not previously encountered in the administration of the drug, namely:

1. The elimination of the drug in certain body fluids: cervical secretion, menstrual fluid, and human milk.
2. Its transmission to and its effect on the unborn fetus.

This paper is a preliminary report of some of the observations made in the study of these problems.

The treatment of gonorrhea with sulfanilamide has been carefully controlled by detailed studies of the blood changes, blood level of the drug, and its urinary excretion. The criterion of cure has been based on the absence of the gonococcus in both culture and smear. Only twelve patients have been studied in this detail. Conclusions, of course, cannot be drawn from such a small number, but cultural methods for determination of cure seem to have positive advantages.

Table 1 shows the number of days required after the institution of sulfanilamide therapy before both smears and cultures became negative. In no case were the smears positive after the cultures had become negative.

This work has been done under a grant from the Albert B. Kupperheimer Foundation.

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Read before the Section on Obstetrics and Gynecology at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 17, 1938.

1. Domagk, G.: Ein Beitrag zur Chemotherapie der bakteriellen Infektionen, *Deutsche med. Wchnschr.* 61: 250 (Feb. 15) 1935. Tréfouël, J.; Tréfouël, J. (Mme.); Nitti, F., and Bovet, D.: Activité du p-aminophénylsulfamide sur les infections streptococciques expérimentales de la souris et du lapin, *Compt. rend. Soc. de biol.* 120: 756, 1935.

Usually the smears were negative before the cultures, though generally the variation was not greater than eight days. Patients 11 and 12, however, showed a difference of thirty-six and fifty-one days respectively. Without cultures, the clinical appearance and smears in these two cases might have led to premature conclusions relative to cure. The advantage of cultures has not been overestimated and they should be employed whenever possible.

It has been fairly well established that sulfanilamide is evenly distributed throughout the body.<sup>2</sup> Its presence in cervical secretion might be assumed and could explain its curative value in gonorrhea. Cervical secretion was collected in vaginal diaphragms and by pipets and analyzed for the presence of the drug. It was found in the secretion, but in such small percentages that its bacteriostatic or bactericidal action could be questioned.

The drug was found in menstrual blood in appreciably greater proportion than in the cervical secretions.

It is of considerable importance to know whether nursing mothers excrete sulfanilamide in their milk. Studies of methods for the determination of the amount of sulfanilamide in the milk of lactating women were begun some time ago. While this work was in progress, Bauer and Gunderson<sup>3</sup> reported the effect of sulfanilamide on streptococcic mastitis in cows and stated that the amount of drug excreted in the cow's milk could be determined by a modification of Fuller's method for blood. Hepburn, Paxon and Rogers<sup>4</sup> found sulfanilamide in the milk of sixteen puerperal women. The concentrations varied from 0.55 to 2.17 mg. per hundred cubic centimeters twenty-four hours after its initial administration. No procedure for analysis was given.

We have used a modification of Marshall's<sup>5</sup> method for blood. In brief, the method was as follows: To 5 cc. of milk in a centrifuge tube was added 2.5 cc. of a 20 per cent solution of *p*-toluenesulfonic acid. The solutions were mixed, allowed to stand overnight at room temperature and then centrifuged. If the cream rose to

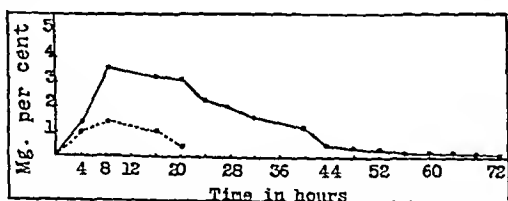


Chart 1.—Comparison of milk and blood levels: Two Gm. (30 grains) of sulfanilamide administered in two doses four hours apart. Solid line, milk; broken line, blood.

the top, it was necessary to follow centrifugation by filtration. Occasionally at this point there was a slight turbidity which made accurate colorimetric determinations impossible. This turbidity could usually be cleared by a drop or two of acid.

Three cc. of the clear supernatant liquid or of the filtrate was pipetted into a flask and diluted with 8 cc.

of distilled water, i. e. a 1:5 dilution of milk. The *pH* of this solution was about 1.0, which seems to be the optimal acidity for the coupling reaction. To the solution was added 1 cc. of a 0.1 per cent solution of sodium nitrite. After three minutes, 5 cc. of a solution of dimethyl *a* naphthylamine (1 cc. in 250 cc. of 95 per cent ethyl alcohol) was added, and the color was compared with a suitable standard. Ordinary breast milk to which definite concentrations of sulfanilamide have been added can be treated in the manner just described and used as a standard. Ten cc. of a standard aqueous solution to which 1 cc. of *p*-toluenesulfonic acid has

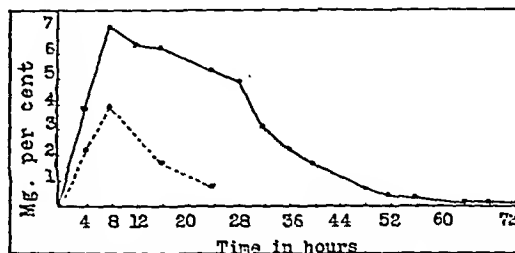


Chart 2.—Comparison of milk and blood levels: Four Gm. (60 grains) of sulfanilamide administered in two doses four hours apart. Solid line, milk; broken line, blood.

been added may also serve as a colorimetric standard, but the solution which has contained milk tends to give a more exact color match.

Perhaps it should be mentioned again that this diazotization and coupling reaction is a general reaction characteristic of all aromatic amines and not a specific one for sulfanilamide. For that reason, controls were run on samples of milk obtained from each patient just before the drug was given. No false positive reactions were observed.

The patients were in the fourth to the tenth postpartum day and received orally a total of 2 or 4 Gm. (30 or 60 grains) of sulfanilamide in two equal four hourly doses. Alternate breasts were emptied by an electric breast pump at intervals of four hours. Whenever possible, blood was taken just before the breasts were pumped; the milk and blood levels were compared and the total amount of drug excreted in the urine was determined. The accompanying graphs show the results obtained with two typical patients who received 2 and 4 Gm. doses, respectively.

Two groups of ten patients each received 2 and 4 Gm. doses, respectively, of sulfanilamide. Tables 2 and 3 show the amounts of drug excreted daily for the three days following the administration of the drug.

Sulfanilamide was excreted in the milk as in the urine, partly unchanged and partly as the conjugated acetyl form. This may be of some importance since it has been shown that in animals the toxicity of acetyl sulfanilamide is somewhat greater than that of the free sulfanilamide.<sup>6</sup>

Of the ten patients who received 2 Gm. doses, the total amount of drug excreted in the milk varied from 3.76 to 13.67 mg.; of those who received 4 Gm. doses, the variation was from 11.77 to 54.00 mg. In terms of milligrams per cubic centimeter the variation was from 0.006 to 0.016 and from 0.019 to 0.040 mg. per cubic centimeter respectively. The amount of drug excreted does not seem to be related to the total milk volume.

6. Marshall, E. K., Jr.; Emerson, Kendall, Jr., and Cutting, W. C.: The Toxicity of Sulfanilamide, *J. A. M. A.* 110: 252 (Jan. 22) 1938.

2. Marshall, E. K., Jr.; Emerson, Kendall, Jr., and Cutting, W. C.: The Renal Excretion of Sulfanilamide, *J. Pharmacol. & Exper. Therap.* 61: 191 (Oct.) 1937.

3. Bauer, Henry, and Gunderson, M. F.: The Effect of Sulfanilamide upon the Streptococci in the Udder of Mastitis Cows and a Method for Its Estimation in Milk, *J. Bact.* 35: 66 (Jan.) 1938.

4. Hepburn, J. S.; Paxon, N. F., and Rogers, A. N.: Secretion of Ingested Sulfanilamide in Human Milk and in the Urine of the Infant, *Sc. Proc. Am. Soc. Biol. Chem.* 32: liv (April) 1938.

5. Marshall, E. K., Jr.: Determination of Sulfanilamide in Blood and Urine, *J. Biol. Chem.* 122: 263 (Dec.) 1937. Marshall, E. K., Jr.; Emerson, Kendall, Jr., and Cutting, W. C.: Para-Aminobenzenesulfonamide, *J. A. M. A.* 108: 953 (March 20) 1937.

Some patients, whose urinary excretion of sulfanilamide was poor, eliminated proportionately larger amounts of the drug in the milk.

The milk levels were higher than the blood levels from the time the first specimens were collected, four hours after initial medication, and sulfanilamide continued to be excreted in the milk even after the blood levels had become negligible. In the patients who

TABLE 2.—Free Sulfanilamide Excreted Daily in Milk  
Dose 2 Gm. (30 Grains)

Patient	Free Sulfanilamide, Mg.				Total Cc. of Milk
	1st Day	2d Day	3d Day	Total	
1	6.28	3.81	0.56	10.65	668
2	7.94	3.32	0.41	13.67	916
3	5.34	2.03	0.54	7.91	483
4	1.50	1.42	0.84	3.76	412
5	5.67	3.15	0.80	9.62	1,594
6	5.20	4.40	0.51	10.11	434
7	5.00	2.35	0.55	8.83	456
8	2.07	2.04	0.23	4.34	1,041
9	5.85	3.91	0.74	10.50	527
10	6.12	4.65	0.57	11.34	495
Range	1.50 to 7.94	1.42 to 5.32	0.23 to 0.84	3.76 to 13.67	
Mean	5.18	3.31	0.57	9.07	

received 4 Gm. of drug, the blood level dropped at the end of twenty-four hours to about 1 mg. per hundred cubic centimeters, while the milk level was still from 4.2 to 8.8 mg. per hundred cubic centimeters. It was still above 1.0 at the end of forty hours and in some cases it was as high as 1.4 mg. per hundred cubic centimeters even after sixty hours.

The appreciable differences in blood and milk levels during the first forty-eight hours require some explanation, even though these differences may not be so great as the graphs might lead one to believe. The milk and blood specimens were collected at the same time, but it must not be assumed that the time relationship of the levels is absolute. The blood level is momentary, while the milk level represents a cumulation level of the normal and abnormal constituents excreted during the previous four hours. The continued excretion of the drug in the milk after the blood levels were negligibly low seems to indicate that there is some concentration of the drug in the mammary glands. We have no proof to offer but suggest that the materials taken from the blood stream circulating through the breast to form milk may have an affinity for sulfanilamide. These substances accumulate in the breast and are ultimately excreted in the milk rather slowly, so that there is a period of retention.

From 60 to 75 per cent of the sulfanilamide can be accounted for in the urine, where it seems to be excreted more rapidly than in the milk. Little or no drug was found in the urine after forty-eight hours.

The largest amount of drug excreted in the milk was only 1.5 per cent of that administered. With a double dose of drug, considerably more than a double amount was excreted in the milk. Whether or not prolonged use would result in an accumulation of the drug in the milk cannot be answered at this time.

Hoffman, Schneider, Blatt, Herrold and others<sup>7</sup> have shown that young children tolerate the drug quite well. The tolerance of the newborn is unknown; therefore it would seem safer to discontinue breast feeding during the period of the presence of sulfanilamide in the milk.

7. Hoffman, S. J.; Schneider, Maurice; Blatt, M. L., and Herrold, R. D.: Sulfanilamide in the Treatment of Gonorrheal Vulvovaginitis, *J. A. M. A.* 110:1541 (May 7) 1938. Symposium on Sulfanilamide Therapy, *J. Pediat.* 11:156 (Aug.) 1937.

The rabbit was the animal chosen for the study of the effect of sulfanilamide<sup>8</sup> on the fetus. Pregnant rabbits tolerate handling better than rats or mice, and their period of gestation is relatively short. In the rabbit, as in man, the drug is partly acetylated in the body and excreted in the conjugated acetyl, as well as the unchanged form. In the dog, acetylation does not seem to take place.<sup>2</sup>

The toxicity of single doses of sulfanilamide has been fairly well determined for the rabbit. Raiziss, Severac and Moetsch<sup>9</sup> showed that 94 per cent of their rabbits tolerated oral administration of 1.5 Gm. per kilogram; 50 per cent tolerated 2 Gm. per kilogram. Halpern and Mayer<sup>10</sup> stated that the toxic dose for rabbits was 2 Gm. per kilogram. Almost no work has been done on the toxicity of the drug when it is administered over a prolonged period. Marshall, Cutting and Emerson<sup>6</sup> reported that deaths occurred in two rabbits that had received 3.5 Gm. per kilogram of sulfanilamide within two days, but no ill effects were observed in two rabbits which had received 4 Gm. per kilogram within four days.

It seemed best in a study of this type to determine first the effect during pregnancy of large but sublethal doses of the drug and then to decrease the dosage in subsequent groups as necessary. The first group of twenty animals received 0.5 Gm. per kilogram, an amount, of course, proportionately very large in comparison with the dose administered to man but one which was believed to be well within the toxic limits for the rabbit, since a group of five nonpregnant rabbits received the dosage with little effect other than a slight loss of appetite. The second group of twenty and a third group now being studied received 0.25 Gm. and 0.10 Gm. per kilogram, respectively.

Rabbits were obtained from reliable rabbitries, in groups of four, all bred on the same day. They varied in size from 2.5 to 6.5 Kg., but most of them were between 4 and 5 Kg. Two, and later one, of each group of four were used as controls. The controls, eleven in all, were handled and manipulated in exactly the same manner as the test rabbits, but they received no drug.

TABLE 3.—Free Sulfanilamide Excreted Daily in Milk  
Dose 4 Gm. (60 Grains)

Patient	Free Sulfanilamide, Mg.				Total Cc. of Milk
	1st Day	2d Day	3d Day	Total	
1	23.45	16.44	5.60	45.49	1,146
2	32.50	18.47	3.03	54.00	1,415
3	21.88	10.33	0.71	32.92	937
4	11.61	9.19	1.27	22.07	1,148
5	7.08	4.14	0.63	11.77	1,065
6	20.15	0.87	1.24	31.26	557
7	31.08	15.56	4.23	50.87	491
8	12.52	10.08	1.19	23.89	537
9	22.57	15.89	5.67	44.13	1,060
10	8.81	7.93	0.57	17.33	418
Range	7.98 to 32.50	4.14 to 18.47	0.57 to 5.60	11.77 to 54.00	
Mean	19.25	11.79	2.41	33.37	

At first the sulfanilamide was fed in tablets or in acacia suspension, but later gelatin capsules were used exclusively. The rabbit was held by the back of the neck and hind legs in a half sitting position, and the capsules, which had been moistened in water, were placed in the pharynx. No mouth gag of any kind

8. The crystalline prontylin used in this investigation was supplied through the courtesy of the Department of Medical Research, Winthrop Chemical Company, Inc.

9. Raiziss, G. W.; Severac, Marie, and Moetsch, J. C.: Chemotherapeutic Studies of Sulfanilamide, *J. Chemotherapy* 14:1 (April) 1937.

10. Halpern, B. N., and Mayer, R. L.: De quelques substances anti-streptococciques, *Presse méd.* 45:747 (May 19) 1937.

was used; thus struggling and handling were reduced to a minimum. Medication, once a day, was begun on the twenty-third day of pregnancy, i. e., eight days before the due date, and was continued until the young were born.

During the experiments there were seven deaths (11 per cent) among the test rabbits and one (7 per cent) in the controls. Of the test rabbits three died before delivery, two during delivery and two on the third day after delivery. Three of the deaths were due to causes not attributable to the drug; the other four may or may not have been due to individual susceptibility. The organs of the animals that died after delivery contained no sulfanilamide.

Fifty per cent of the controls lost from 200 to 600 Gm. each in weight. Of those that received 0.5 Gm. per kilogram, 86 per cent lost from 200 to 600 Gm. each. Most of these animals appeared somewhat toxic and lost appetite. Some of the rabbits received a small amount of a solution of sodium bicarbonate after their capsules, but with no apparent beneficial results.

One of the young from each litter was killed as soon after birth as possible. Portions of the liver, lungs, kidney and brain were examined for pathologic changes, and the rest analyzed for sulfanilamide content. The drug was found in the blood, urine and organs of all the

All the rabbits listed in table 4 were housed in individual large cages, which were provided with nest boxes. At the beginning of this work, however, the experiments were carried out with rabbits (twenty-two in all) housed in ordinary small rabbit cages. In this series, in which conditions were less favorable for growth, not a single young born of fifteen test rabbits survived; twelve, or 23 per cent, of the fifty-one young born of seven control rabbits did survive. It would seem, therefore, that sulfanilamide diminishes the chances of survival of the young, and particularly so if conditions are unfavorable.

Although the rabbit excretes the drug in the same form as man, one cannot be certain that its absorption and utilization are the same. We have, however, established the fact that the drug is transmitted to the human fetus. Three patients received 1 Gm. each of sulfanilamide from three to six hours before delivery. The drug was found in the placenta and cord blood in all three cases.

#### CONCLUSIONS

1. Sulfanilamide has been found in the cervical secretion and menstrual fluid, but in amounts so small that its bactericidal action on the gonococcus is questionable.

The criterion of cure of gonorrhea should be based, if possible, on cultural studies as well as smears.

2. Sulfanilamide is excreted in breast milk, both free and as the acetyl derivative. The milk level is considerably above the blood level, and the drug is excreted in the milk for some time after the blood level is negligibly low. With doses of 2 and 4 Gm. (30 and 60 grains) the total amount excreted was never greater than 1.5 per cent of the amount of the drug administered. It was still being excreted in small amounts seventy-two hours after medication had been discontinued.

3. Sulfanilamide is transmitted to the placenta and fetus of the rabbit and is associated with a marked increase in the mortality of the young. Sulfanilamide has also been found in the placenta and cord blood of the human being.

4. Until more is known of the tolerance of the human fetus and of the newborn for sulfanilamide, the drug should be administered only with the utmost caution during pregnancy and the period of lactation. If administered to the mother, breast feeding should be discontinued during the period that sulfanilamide is excreted in the milk.

#### ABSTRACT OF DISCUSSION

DR. HERBERT O. CALVERY, Washington, D. C.: Sulfanilamide is partially acetylated in man and most other animals, the dog being the exception so far as is known. In their summary the authors discussed a question as to whether or not the toxicity referred to might be due to the acetyl derivative; as a matter of fact, they did not answer that but did state that the acetyl derivative is always excreted in the milk. I wonder whether they found the acetyl derivative in vaginal secretions and whether or not the effect of sulfanilamide on the fetus was due to the toxicity of the acetyl derivative, which is more toxic than the free sulfanilamide, or whether they think that was due to the sulfanilamide itself. The authors pointed out that the administration of this substance to pregnant animals is hazardous and should be undertaken with caution. I cannot help raising the question concerning the high mortality among their controls which they probably have already partially answered by stating that they had trouble with caging. Because of the loss of weight and high mortality among the control

TABLE 4.—Effect of Sulfanilamide on the Unborn Rabbit Fetus

Dosage	Does		Young		
	Total	Comment	Total Born	No. of Deaths*	Per Cent Deaths
Controls (no drug).....	10	On time	73	16	21.9
0.5 Gm. per kilogram.....	20	12 on time 8 early	79 62	46 43	58.2 69.3 } 63.1
0.25 Gm. per kilogram.....	20	16 on time 4 early	140 22	44 13	31.4 60.0 } 35.2

\* Fetal and neonatal deaths, but not those killed for the experiment.

stillborn and killed young from test animals. There were no false positive reactions in the young from controls.

In one case the drug was fed for eight days and then discontinued. The rabbit kindled three days later. No drug was found in the blood or urine of the young that were killed, but it was present in the liver.

After the third day the size of the large litters was decreased to seven; the young above that number were killed or, if possible, transferred to other does. Whenever transfers were made from control rabbits to test rabbits, the growth of the young fed by the test rabbit was much slower than that of those fed by the control. The does and young were observed for eight days and then returned to the rabbitries.

In table 4 the mortality of the young born of test and control animals is compared.

When sulfanilamide in amounts well within the tolerance dose was fed to pregnant rabbits, the drug was transmitted to the circulatory system of the fetus and was associated with a marked increase in the mortality of the young. When the dose was decreased from 0.5 Gm. per kilogram to 0.25 Gm. per kilogram, the effect of the drug was still evident but it was not nearly so pronounced. In addition to the increased mortality, the drug seemed to alter the time of delivery. Forty per cent of the animals that received 0.5 Gm. per kilogram of the drug kindled from three to five days before their due date.

animals it seemed to me that some other factor might be operating as well as the sulfanilamide. Such experiments as these are highly commendable types of investigations. I think pharmacologists should be chided for the negligence they have shown in failure to investigate thoroughly the toxicity and pharmacology of a compound of such clinical significance as this one. Probably most physicians know that sulfanilamide was used in the clinic even before it was ever investigated on animals at all, and it is my feeling that this should not be the case. It is probably unfair to ask the authors to carry out pharmacologic experiments when they have many other things they would prefer to do, but I think they feel that the pharmacologic tests should by all means be made, and since this information was not available on this point, they have made it so.

DR. J. P. PRATT, Detroit: Recently Dr. H. L. Steward and I have been interested in the excretion of sulfanilamide in human milk. Twenty-eight cases have been studied for the concentration of the compound in blood and milk. Our method of administration differs slightly from the authors' but the results obtained are comparable. They divided the total administration into two doses for one day, while we gave the same total daily amount of 30 or 60 grains (2 or 4 Gm.) in 5 or 10 grain (0.3 or 0.65 Gm.) doses every four hours day and night at nursing time. Milk was taken with the breast pump immediately before the feeding, the accumulated excretion thus being sampled during each four hours. Ten patients received 30 grains (2 Gm.) daily, while eighteen received 60 grains (4 Gm.). They gave sulfanilamide only one day but followed the excretion for several days. We gave the drug daily for seven days and followed the excretion. Allowing for the differences in administration, our results are nearly parallel. We do not share the authors' conclusion that "if administered to the mother, breast-feeding should be discontinued during the period that sulfanilamide is excreted in the milk." They show that the highest total excretion in the first day is only 32.5 mg., or about one-half grain. While there is no established dose for newborn babies, Long and Bliss (*Ann. Int. Med.* 11:575 [Oct.] 1937) state that they should receive a total of 1,000 mg., or 15 grains, for 10 pounds of body weight during the first twenty-four hours. By the administration of 60 grains to the mother, the authors' figures indicate that a nursing baby would receive only one thirtieth of the dose suggested by Long and Bliss. A full dose for the baby would therefore call for thirty times 32.5 mg., the highest daily excretion in milk reported by Dr. Adair and his co-workers, or 975 mg. To attain such a level is not practical. We have found that, among the twenty-eight nursing babies whose mothers were receiving sulfanilamide, not one showed any clinical signs of toxicity. In the blood of eight babies we found only traces which were too small to measure. The total twenty-four hour urine from six of the eight babies showed only from 1 to 3 mg. per hundred cubic centimeters. The authors have drawn conclusions by inference from animals which do not seem to be in accord with the clinical data. There is no apparent danger of toxicity to a baby nursing from a mother receiving therapeutic doses. Conversely, it is not an adequate therapeutic means of administering sulfanilamide to the nursing baby.

DR. E. D. PLASS, Iowa City: It is not the function of the Chair to discuss, but I would like to ask the authors how they explain the fact that the mammary gland excretion of sulfanilamide continues after the sulfanilamide has disappeared, apparently, from the blood stream.

DR. H. CLOSE HESSELTINE, Chicago: In choosing the amount for the rabbits we tried to take what we thought might be a maximum sublethal dose. We had to guess at that because there was not much information available for dosage continued over a period of days in these animals. We first started with 0.5 mg. per kilogram daily, beginning eight days before the expectant date of delivery. Then to evaluate smaller doses, the amount was changed to 0.25 mg. per kilogram and later to an even lower dosage. Dr. Calvery's question regarding the deaths of the bunnies in the controlled series is appreciated. When larger cages were used the rate decreased appreciably, while those from mothers receiving the drug did not change so much. The controlled series received no drug but had

identical handling and were given acacia, capsules, or tablets without the drug. For the present we disagree with Dr. Pratt as to the safety of nursing, as we do not know how much of the drug will appear in the milk over a period of days with full dosage. In the future, evaluations will be made on the blood levels and milk excretion after three or four days' therapy and then it may be seen whether it is still higher than after one or two doses. This reason alone makes us skeptical. As to the question from the Chair, we do not yet know why sulfanilamide is excreted in the milk for hours after it had appreciably or practically disappeared from the blood. Controlled analyses have repeatedly shown this fact and we believe that this will be easily confirmed by others. For the present we might assume that the breast tissue is capable of picking up the drug, holding it, and then excreting it over a period of hours or perhaps days.

## THERAPEUTIC EFFECTIVENESS AND TOXICITY OF SULFANILAMIDE

AND SEVERAL RELATED COMPOUNDS: FURTHER CLINICAL OBSERVATIONS

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In a previous paper we<sup>1</sup> expressed our belief in the efficacy of sulfanilamide in the treatment of infections due to hemolytic streptococci, meningococci, gonococci and organisms causative of infections of the urinary tract with the exception of *Streptococcus faecalis*.

Our present report deals briefly with our further experience with sulfanilamide and with our use of other sulfonamide preparations. It includes a review of oral administration of two allied preparations, di-methyl-di-sulfanilamide (di-septal, Uliron, DB90, D373) and neoprontosil (prontosil soluble). A preliminary review also is given of treatment of chronic ulcerative colitis with preparations of the type of those just named.

### SULFANILAMIDE

Since our first report greater experience with sulfanilamide has enabled us to confirm our early impressions of its therapeutic value, limitations and dangers. With the passage of time we have strengthened our belief in the value of this drug in the treatment of infections mentioned in the opening paragraph. We have not had sufficient experience to allow us to form any definite opinion regarding its true worth in treatment of infections with pneumococci. Results obtained with specific serum, however, should make use of such serum the treatment of choice for infections with pneumococci, although experimental work<sup>2</sup> indicates the wisdom of the combination of specific serum and sulfanilamide in selected cases, and the use of sulfanilamide alone when serum therapy is not available or when the disease is of considerable duration.

From the Division of Medicine, University of Washington Clinic. Read before the Eighty-Ninth Annual Meeting of the American Medical Association, San Francisco, June 17, 1938.

1. Brown, A. E.; Bannick, E. G., and Habein, H. C.: *The Use of Sulfanilamide and Prontosil Solution*, *Minnesota Med.* 20: 691-697 (Nov.) 1937.

2. Branhan, Sara E.: *Studies in Chemotherapy: V. Sulfanilamide, Serum and Combined Drug and Serum Therapy in Experimental Meningococcus and Pneumococcus Infections in Mice*, *Pub. Health Rep.* 52: 685-695 (May 28) 1937. Osgood, E. E.: Personal communication to the authors.



Our experience with sulfanilamide thus far has demonstrated a lack of satisfactory results in treating infections with *Staphylococcus aureus*, *Staphylococcus albus* and *Streptococcus viridans*. We have had varying results in treatment of several cases of undulant fever, and in one case of tularemia we noted no benefit from sulfanilamide. The results of our treatment of rheumatic fever have paralleled those reported by Swift<sup>3</sup> and have been unsatisfactory in general, just as have been those obtained in the treatment of infectious arthritis and fibrositis. The course of two cases of severe infectious mononucleosis appeared to be shortened when sulfanilamide was used.

Our experience has led us to feel that the optimal dosage of sulfanilamide is as yet unsettled. We believe that this depends chiefly on the type and severity of the infection. Long's<sup>4</sup> studies indicating the value of a concentration of the drug of 10 mg. per hundred cubic centimeters of blood have caused us to believe that this is a favorable concentration to obtain in fulminant cases. A concentration in the blood approaching this should be attained early and maintained until clinical improvement occurs or until symptoms of toxicity necessitate its reduction. Recently Long has advocated even higher concentrations in such cases. In the moderate and mild infections and in most patients with gonorrhea a concentration of sulfanilamide in the blood of from 5 to 7 mg. per hundred cubic centimeters seems to be adequate and this frequently can be obtained in adults with daily doses of from 4 to 5 Gm. In most infections of the urinary tract, daily doses of from 3 to 4 Gm. of sulfanilamide produce a concentration of sulfanilamide in the blood of from 3 to 4 mg. per hundred cubic centimeters, which seems to produce satisfactory results and the results seem to be definitely enhanced if the urine is alkaline. The recent experimental work of Osgood<sup>5</sup> tends to show the value of small doses of the drug and yet our clinical experience has seemed to indicate the value of comparatively large doses at least during the early part of the treatment. However, we have not had sufficient experience with small doses properly to evaluate their effect. Uniform intervals between doses within each twenty-four hours seem essential to maintain satisfactory concentration in the blood for the production of optimal results.

The toxic manifestations which appear in the course of treatment with sulfanilamide seem to occur on a basis of sensitivity and idiosyncrasy. The latter, while apparently rare, is serious and the former, while more common, is usually mild but may become serious if ignored. Most individuals seem to exhibit some sensitivity when the initial doses of the drug are large or when the total administered amount is considerable. The toxic manifestations which occur with such doses are usually mild and consist largely of malaise, anorexia, nausea, vertigo and tinnitus. With continued use of the drug, these symptoms may be followed by cyanosis attributable to methemoglobinemia, sulfhemoglobinemia or the presence of an unidentified substance in the blood; abdominal cramps, diarrhea, cutaneous lesions, fever, paresthesias and so on also may supervene. When these mild to moderate toxic symptoms occur

we believe they should be considered seriously, for they may herald the advent of more serious complications such as leukopenia, granulocytopenia, anemia of acute type or associated with crisis, jaundice and a state resembling shock. Persistence and increase of these mild to moderate symptoms, in spite of decrease in dosage of the drug, constitute ample reasons for discontinuance of its administration, particularly if the preparation is used as a more or less optional measure. If after several days a further attempt is made to use the drug and these symptoms again arise and tend to persist, we believe that administration should be permanently discontinued and some other form of treatment used. We also believe that the blood offers an index of toxicity even more important than the symptoms and that decrease in the hemoglobin content or in the erythrocyte count or leukocyte count must be taken as evidence of a dangerous complication which necessitates immediate discontinuance of this form of therapy.

The likelihood of occurrence of the foregoing toxic manifestations is increased in the presence of existing marked anemia, leukopenia, and renal and hepatic damage. The presence of any of these conditions, therefore, constitutes a contraindication to the use of sulfanilamide. If, under certain circumstances, it seems advisable to use the drug in spite of the presence of contraindications, it must be given with caution. We have seen no fatalities from blood dyscrasia following use of this preparation. Jaundice following the use of sulfanilamide has been noted in two cases in which death occurred and in which it is possible that hepatic damage existed prior to the beginning of the treatment. We have felt, as a result of this experience, that sulfanilamide may cause hepatic damage which already exists to progress to a stage from which regeneration is impossible. In contrast to this complication are the mild attacks of jaundice which occasionally are seen and which usually subside rapidly when use of the drug is discontinued and intake of fluids is forced. These two measures are of extreme importance in combating toxemia from sulfanilamide and may be reinforced by the use of transfusions of blood or oral administration of bone marrow when disturbances in the blood occur.

Fortified by a knowledge of the nature of the toxic manifestations of sulfanilamide, we believe that constant observation of the patient under treatment will allow detection of these abnormal reactions when they are still amenable to appropriate measures and will prevent the occurrence of fatalities save in rare instances.

#### DI-METHYL-DI-SULFANILAMIDE

In view of available reports,<sup>6</sup> we felt that clinical work with di-methyl-di-sulfanilamide was justifiable. From September to December 1937, di-methyl-di-sulf-

6. These include:  
Domagk, Gerhard: Weitere Untersuchungen über die chemotherapeutische Wirkung von Sulfanilamid und seinen Derivaten bei bakteriellen Infektionen, *Klin. Wchnschr.* 16: 11 (Oct. 9) 1937.  
Bauer, Hugo, and R. ... in Chemotherapy: VII. Some New Sulfur Compounds Active Against Bacterial Infections, *Pub. Health Rep.* 53: 40-49 (Jan. 14) 1938.  
Gray, W. H.; Buttle, G. A. H., and Stephenson, Dora: Derivatives of *p*-Aminobenzenesulfonamide in the Treatment of Streptococcal Infection in Mice, *Biochem. J.* 31: 724-729 (May) 1937.  
Grütz, O.: Neue Grundlegung für die Gonorrhoebehandlung, München, med. Wchnschr. 2: 1201-1205 (July 30) 1937.  
Koch, Willy: Morbilliformes Exanthem nach Uliron, *Dermat. Wchnschr.* 106: 103-105 (Jan. 22) 1938.  
Killmer, G., and Nehrkorn, A.: Erfahrungen mit Uliron bei Staphylokokkeninfektionen, München, med. Wchnschr. 2: 2021-2022 (Dec. 17) 1937.  
Desiderius, Samu: Zur "Ulironfrage," *Dermat. Wchnschr.* 106: 105-108 (Jan. 22) 1938.  
Schubert, M.: Zur Chemotherapie der Gonorrhoe mit Uliron (DB 90) und Disseptal (DB 87), *ibid.* 105: 1549-1553 (Dec. 4) 1937.  
Schmidt, Gerhard: Weitere Erfahrungen mit Uliron, *ibid.* 106: 55-58 (Jan. 8) 1938.

3. Swift, H. F.; Moen, J. K., and Hirst, G. K.: The Action of Sulfanilamide in Rheumatic Fever, *J. A. M. A.* 110: 426-434 (Feb. 5) 1938.

4. Long, P. H., and Bliss, Eleanor A.: Para-Amino-Benzene-Sulfonamide and Its Derivatives; Experimental and Clinical Observations on Their Use in the Treatment of Beta-Hemolytic Streptococcal Infection: A Preliminary Report, *J. A. M. A.* 108: 32-37 (Jan. 2) 1937.

5. Osgood, E. E.: Culture of Human Marrow: Studies on the Mode of Action of Sulfanilamide, *J. A. M. A.* 110: 349-356 (Jan. 29) 1938.

anilamide was used at the Mayo Clinic in treatment of approximately seventy patients. Of this group, thirty-two were seen by us in the general medical services and form the major basis of this report; the remaining thirty-eight were seen by our colleagues of the Section on Urology.

This series of thirty-two patients represented infections with anaerobic streptococci, hemolytic streptococci, *Streptococcus viridans*, *Staphylococcus aureus*, colon bacilli, *Proteus vulgaris*, gonococci, pneumococci and actinomyces. Although small, this series offers some basis for comparison with a similar group of patients whom we have treated with sulfanilamide and therapeutically the results seem similar. Although the coincidental use of other therapeutic agents, such as roentgen rays or radium, in treatment of certain of these infections has made accurate evaluation of individual therapeutic measures difficult, nevertheless we have felt, in view of past experience, that many of the favorable results would not have occurred so promptly without the use of di-methyl-di-sulfanilamide.

The usual daily dose of this drug was 4 Gm., although at times daily doses up to 7 Gm. were given and the

for conjugated sulfanilamide when the daily dose was 4 Gm. When a similar daily dose of di-methyl-di-sulfanilamide was administered, urinary concentrations were 58 mg. per hundred cubic centimeters for free and 68 mg. per hundred cubic centimeters for conjugated di-methyl-di-sulfanilamide.

Of striking interest in this group of thirty-two cases in which di-methyl-di-sulfanilamide was given was the rarity of symptoms of toxicity. In passing it may be mentioned that lack of acute symptoms of toxicity was also noted in the thirty-eight cases seen by the urologists and not included as the basis of this report. Mild nausea and malaise occurred when three patients received a follow-up course of the drug in the treatment of an infection of the urinary tract. In one case of chronic ulcerative colitis during a secondary course of di-methyl-di-sulfanilamide, taken after the patient had left the clinic, there occurred fever, dermatitis and cyanosis, the last presumably due to methemoglobinemia. Also in one case of chronic osteomyelitis with septicemia, mild vertigo and tinnitus occurred.

In seven of the thirty-two cases the previous administration of sulfanilamide has been attended by various manifestations of toxicity which made further treatment with this drug inadvisable. In some instances as little as from 1 to 2 Gm. of sulfanilamide had repeatedly produced cyanosis (methemoglobinemia or sulfhemoglobinemia), malaise, emesis, dermatitis or high fever and yet the administration of di-methyl-di-sulfanilamide in therapeutic doses in these cases produced no clinical evidence of toxicity. In several instances, administration of di-methyl-di-sulfanilamide was begun while toxic effects of sulfanilamide were still present and in every such instance these toxic effects rapidly disappeared when administration of sulfanilamide was discontinued. Although there was evidence of clinical cyanosis in only one instance, nevertheless small amounts of methemoglobin could be detected spectroscopically in the blood of the majority of the patients who received 5 Gm. or more of di-methyl-di-sulfanilamide daily. In no instance was sulfhemoglobin detected in the blood.

Careful observation was made of the concentration of hemoglobin and careful erythrocyte and leukocyte counts were made, but no significant changes attributable to di-methyl-di-sulfanilamide were noted. Neither was there any decline in the carbon dioxide combining power of the plasma, such as has been noted with the use of sulfanilamide. Results of urinalysis also remained essentially negative.

Of the thirty-two cases, in twenty-two improvement was marked, in six no benefit resulted, in three improvement was temporary, and in one the result was questionable. Death of one patient who had actinomycosis and one who had subacute bacterial endocarditis did not seem attributable to the previous use of di-methyl-di-sulfanilamide. Inadequate amounts of di-methyl-di-sulfanilamide were administered to a patient who had *Staphylococcus aureus* septicemia and the course of the disease was unaltered.

In two cases the unusual complication of peripheral neuritis occurred. In each instance only the lower extremities were involved and the complication came on rather rapidly when large doses of di-methyl-di-sulfanilamide had been given for a period longer than fourteen days. However, in four other cases in which the drug had been given in comparable doses for similar periods this complication did not occur. In one instance

TABLE 1.—*Neoprontosil: Patients, Results, Toxicity*

	Number	Per Cent
1. Total patients* .....	93	
2. Total patients treated in this series.....	84	
3. Patients treated with both neoprontosil and sulfanilamide .....	15	17.8
4. Satisfactory results .....	60	72.0
5. Questionable results .....	6	7.0
6. Failure of treatment, patients.....	18	21.0
7. Deaths .....	4	4.7
8. Evidence of toxicity with neoprontosil, patients..	13	15.4
9. Intolerant of sulfanilamide but satisfactory response with neoprontosil, patients.....	10	11.9
10. Intolerance to both neoprontosil and sulfanilamide, patients .....	1	1.1

\* Includes nine cases of chronic ulcerative colitis.

drug was administered orally in five or six divided doses. The total amount of di-methyl-di-sulfanilamide given varied from 96 Gm. in twenty-five days in one case to 8 Gm. in from two to three days in three cases.

The concentrations of di-methyl-di-sulfanilamide in the blood were estimated by the method of Marshall<sup>7</sup> for determining sulfanilamide but a standard of di-methyl-di-sulfanilamide was used instead of one of sulfanilamide. This was done because it was thought that di-methyl-di-sulfanilamide did not form sulfanilamide in the process of metabolism. Hence the reaction product with di-methyl-naphthamine could be approximated more closely by a standard of di-methyl-di-sulfanilamide than by one of sulfanilamide. The results disclosed a much lower concentration of di-methyl-di-sulfanilamide in the blood than the concentration of sulfanilamide obtained when similar amounts of that drug were given. Concentrations of di-methyl-di-sulfanilamide in the blood averaging 1.9 mg. per hundred cubic centimeters were obtained with an average daily dose of 4 Gm. as compared with concentrations of from 4 to 7 mg. per hundred cubic centimeters of sulfanilamide when a similar dose of the latter drug was given. Urinary concentrations of sulfanilamide had averaged from 60 to 125 mg. per hundred cubic centimeters for free sulfanilamide and from 50 to 125 mg. per hundred cubic centimeters

7. Marshall, E. K., Jr.; Emerson, Kendall, Jr., and Cutting, W. C.: Para-Aminobenzene-Sulfonamide: Absorption and Excretion: Method of Determination in Urine and Blood, J. A. M. A. 108: 953-957 (March 20) 1937.

the peripheral neuritis was mild and largely disappeared within seven days, while in the other it was more marked and was accompanied by bilateral foot-drop. Improvement was slow in the latter case but recovery was well advanced after sixty days. In the meantime, other reports on the occurrence of peripheral neuritis, by Hofmann,<sup>8</sup> Tietze,<sup>9</sup> Hüllstrung,<sup>10</sup> and Krause have appeared in the German literature and additional cases have occurred in this country. In some of these cases the upper extremities have been involved. In some instances recovery has remained questionable.

Although di-methyl-di-sulfanilamide has appeared in our experience to possess certain advantages over sulfanilamide largely from the standpoint of lessened toxicity, the fact that its use has been followed by peripheral neuritis has caused us to curtail its clinical application until such time as it may seem that this complication has been eliminated. Possibly supplementary use of vitamin B<sub>1</sub> will be of benefit in preventing peripheral neuritis.

Because of the limitation of clinical material at the time di-methyl-di-sulfanilamide was tried we were unable to come to any definite conclusions regarding its value in infections due to staphylococci and anaerobic streptococci. We also realize that the presentation of such a small series of cases does not permit entirely satisfactory conclusions concerning therapeutic efficiency in other infections but we do feel that this experience is of value and that further controlled clinical and experimental study with this drug is indicated.

#### NEOPRONTOSIL (PRONTOSIL SOLUBLE)

The toxicity of neoprontosil when used parenterally has been said by many workers<sup>11</sup> to be low, and data are available which have tended to support our belief that the drug when given orally might possess valuable therapeutic qualities.<sup>12</sup> Of particular importance in this regard are the experimental studies of Rosenthal<sup>13</sup> and of Raiziss.<sup>14</sup> The former has shown that the therapeutic effect of neoprontosil when given parenterally is probably considerably decreased because of the rapid elimination of from 85 to 95 per cent of the drug in the urine five hours after its administration. Raiziss<sup>14</sup> has shown that the protection afforded experimentally infected animals when neoprontosil is given orally

approximates closely that obtained by the use of sulfanilamide; the protection afforded when neoprontosil is given parenterally is markedly less and at the end of twenty-eight days is less than one half of the protection given following oral administration.

Accordingly we undertook this clinical study. The drug<sup>15</sup> was supplied to us both in tablets of 5 grains (0.3 Gm.) and in capsules. The effect of the two seemed the same, but the capsules offered the advantage that they did not stain the mouth and fingers and their use did away with the objection that the tablets might be insoluble.

Evidence that the drug is quickly absorbed from the gastrointestinal tract is afforded by the rapidity with which the urine becomes colored and by the appreciable quantities of sulfanilamide which appear in the blood and urine of both normal and sick persons within twenty-four hours. The lack of toxicity of neoprontosil and the small quantity of sulfanilamide it contains made it reasonable to try the drug in doses at least as large as those of sulfanilamide.

When we first used neoprontosil orally we did not feel justified in relying on it alone, since we did not

TABLE 2.—Neoprontosil: Age of Patients, Dose, Duration of Treatment, Chemical Examination of Blood

1. Ages of patients treated, range.....	13 to 83 years
2. Average dose per course of treatment.....	25.5 Gm.
3. Largest single dose per day.....	6 Gm.
4. Largest total quantity given any patient.....	90 Gm.
5. Average duration of treatment.....	7 days
6. Longest duration of treatment.....	23 days
7. Average concentration of free sulfanilamide in blood.....	2.1 mg. per 100 cc.
8. Highest concentration of free sulfanilamide in blood.....	3.6 mg. per 100 cc.

actually know how effective it was; hence it was used in conjunction with sulfanilamide in certain cases. In addition, a considerable number of patients were treated with neoprontosil because they were intolerant of sulfanilamide.

We have given neoprontosil orally either alone or in conjunction with some other of the sulfonamide drugs to ninety-three patients (tables 1 and 2). The indications were the same as those for the use of sulfanilamide.

The most important figure in table 1 is that showing the low incidence of toxic reactions to the use of neoprontosil. The incidence of toxic symptoms from sulfanilamide, as noted in our experience and in the literature, is found to be far higher than that noted in this series from neoprontosil. Furthermore, ten cases were observed in which neoprontosil gave satisfactory therapeutic results after sulfanilamide had produced symptoms of toxicity. In three cases of chronic ulcerative colitis the results were similar, but these three cases are not included in table 1.

A rather large percentage of failures was noted. In no one of these cases, however, was an organism demonstrated on which any sulfonamide compound has so far been shown to be bactericidal. We felt that the trial of neoprontosil justified its use in attempted treatment of a variety of diseases which included infections due to staphylococci, *Streptococcus viridans* and tubercle bacilli even though sulfanilamide had been shown to be without effect against infection by these organisms.

15. Supplied through the courtesy of the Department of Medical Research of the Winthrop Chemical Company.

8. Hofmann, Edmund: Beobachtungen bei Ulronbehandlung der Gonorrhoe, *Dermat. Wehnschr.* 106:101-103 (Jan. 22) 1938.

9. Tietze, Albrecht: Periphere Lähmungen nach Ulronbehandlung, *München, med. Wehnschr.* 85:332-333 (March 4) 1938.

10. Hüllstrung, H., and Krause, F.: Polyneuritis nach sulfonamidhaltigen Verbindungen bei Menschen und Tauben, *Deutsche med. Wehnschr.* 64:114-116 (Jan. 21) 1938.

11. These include:  
Hageman, P. O.: Toxicity of Sulfanilamide: A Study of the Pathological Lesions in White Mice, *Proc. Soc. Exper. Biol. & Med.* 37:119-122 (Oct.) 1937.

Barlow, O. W.: Relative Toxicities and Therapeutic Values of Three Chemotherapeutic Agents of the Sulfonamide Type, *ibid.* 37:315-318 (Nov.) 1937.

Long, P. H., and Bliss, Eleanor A.: Use of Para Amino Benzene Sulfonamide (Sulfanilamide) or Its Derivatives in Treatment of Infections Due to Beta-Hemolytic Streptococci, *Pneumococci and Meningococci*, South. M. J. 30:479-487 (May) 1937.

Whitby, L. E. H.: An Experimental Assessment of the Therapeutic Efficacy of Amino Compounds, with Special Reference to *p*-Benzylamino-Benzene-Sulfonamide, *Lancet* 2:1517-1519 (June 26) 1937.

Kolmer, J. A., Brown, Herman, and Raiziss, G. W.: The Chemotherapy of Experimental Streptococcus Infections of Rabbits, with Special Reference to Pyridine Compounds and Prontosil Soluble, *J. Pharmacol. & Exper. Therap.* 61:253-271 (Nov.) 1937.

Raiziss, Severac and Moersch.<sup>14</sup>  
12. Berger, E.: Die Wirkung des Prontosils auf die experimentelle Streptokokkensepsis nach Wundinfektionen, *Klin. Wehnschr.* 16:53-55 (Jan. 9) 1937. Raiziss, Severac and Moersch.<sup>14</sup> Rosenthal, Bauer and Brannham.<sup>13</sup>

13. Rosenthal, S. M.; Bauer, Hugo, and Brannham, Sara E.: Studies in Chemotherapy: Comparative Studies of Sulfonamide Compounds in Experimental Pneumococcus, Streptococcus and Meningococcus Infections, *Pub. Health Rep.* 52:662-671 (May 21) 1937.

14. Raiziss, G. W.; Severac, Marie, and Moersch, J. C.: Chemotherapeutic Studies of Sulfamidyl (Para-Amino-Benzene-Sulfonamide) in Experimental Beta-Hemolytic Streptococcal Infection, *J. Chemotherapy* 14:1-11 (April) 1937.

In addition, Hodgkin's disease, periarteritis nodosa, thrombo-angiitis obliterans, infected pulmonary embolus and diffuse arteritis were uninfluenced by treatment with neoprontosil, as might be expected from previous experience with sulfanilamide.

The mild nature of the toxic manifestations attributable to neoprontosil deserves emphasis. Cyanosis, insufficient to hinder treatment, was detected in four cases. Gastrointestinal intolerance to the drug, evidenced by nausea, cramps and vomiting, forced discontinuance of use of the drug in four cases; of these, two patients also used alcohol at the same time, which appeared to accentuate the irritant effect of the neoprontosil. Only one patient, who suffered from chills, fever and vomiting, was acutely sick from the use of

study of morphology of the cells and determinations of hemoglobin have disclosed changes, they could be considered to be associated with the primary disease. Acidosis never has become manifest clinically and cutaneous lesions have not been detected.

Slight fatigue and vertigo were noted in several cases. The sense of fatigue was experienced chiefly by those patients who were not seriously sick and it did not constitute a severe annoyance. Mild symptoms of gastrointestinal irritability when present usually appeared within the first day of treatment and generally could be relieved by giving the drug when the stomach was relatively empty. Our routine now includes giving the drug one hour before meals. Vomiting occasionally develops near the third day of treatment, which may necessitate withdrawal of the drug. As with sulfanilamide, these manifestations tend to disappear if brief rest from treatment is allowed. We found it advisable to inform the patients of the red color which appears in the urine and occasionally in the stools.

The concentration of sulfanilamide in the blood of patients to whom neoprontosil was given orally varied from 1 to 3.6 mg. per hundred cubic centimeters. Although these figures are low, the recent work of Osgood<sup>6</sup> and Brownlee indicates that this concentration of sulfanilamide may be therapeutically effective. The early clinical observations of the use of these compounds demonstrated therapeutic effectiveness with smaller doses of neoprontosil than were administered to the patients in this series of cases.

Conclusions cannot be drawn from so few cases but perhaps we may suggest that neoprontosil when given by mouth constitutes a fairly effective therapeutic agent associated with relatively little toxicity. Oral administration possesses advantages over parenteral administration because it affords the use of larger doses, which permit greater concentrations in the tissues and greater therapeutic effectiveness and because it can be easily given. Our experience suggests that its chief role may be in treatment of patients who are moderately or markedly intolerant of sulfanilamide even in smaller doses than are usually administered and who urgently need treatment with some other agent that is valuable in combating infection. However, warning must again be sounded concerning the possibility of the occurrence of the toxic manifestations already noted in the use of sulfanilamide. Moreover, the existence of toxic features peculiar to neoprontosil alone has not been disproved.

#### TREATMENT OF CHRONIC ULCERATIVE COLITIS WITH SULFANILAMIDE AND SIMILAR COMPOUNDS

This part of the paper is a preliminary report on the use of sulfanilamide, neoprontosil and di-methyl-di-sulfanilamide in the treatment of certain cases of chronic ulcerative colitis.

The first patient who was given this treatment (patient 1, table 3) had been troubled with chronic ulcerative colitis intermittently for six years in spite of intensive treatment with dietary measures, serum and vaccine. On the fourth day after treatment with sulfanilamide was started, a severe toxic reaction occurred and use of the drug was discontinued. Following this the patient noticed marked improvement in the symptoms of colitis; the number of stools was greatly reduced and they contained much less blood and pus. After five weeks of improvement her symptoms recurred but because several

TABLE 3.—Uncomplicated Chronic Ulcerative Colitis\* Treated with Neoprontosil (Prontosil Soluble) or Similar Compounds

Case	Duration of Illness, Yr.	Result of Treatment	Period of Observation, Mo.	Drug Used	Toxic Reactions	Comment
1	6	Marked improvement	8	Sulfanilamide Neoprontosil D 373	Severe None None	Symptom free; proctoscopic examination negative
2	3	Marked improvement	3	D 373 Neoprontosil	Severe None	Slight recurrence of symptoms when not taking the drug
3	½	Marked temporary improvement	7	Sulfanilamide Neoprontosil	Mild None	Slight recurrence of symptoms
4	4	Marked improvement	2	Neoprontosil	None	Symptom free; proctoscopic examination negative
5	3½	Marked improvement	5	D 373 Sulfanilamide Neoprontosil	Mild† Mild None	Nearly symptom free
6	1½	Marked improvement	1½	Neoprontosil	None	Nearly symptom free
7	10	Considerable improvement	7	Neoprontosil	Mild at first	Definite improvement, larger doses necessary
8	7	Temporary improvement	4	D 373	Severe†	Peripheral neuritis, drug discontinued; ileostomy
9	1¼	Marked improvement	¾	Neoprontosil	None	Symptom free; proctoscopic examination negative

\* Proctoscopic evidence of chronic ulcerative colitis in each case.  
† Indicates occurrence of peripheral neuritis.

the drug and recovery was immediate on discontinuing its use. Satisfactory results were noted in one case each of infection due to pneumococci of types 1, 2, 7 and 8.

Although we do not believe that neoprontosil is effective if sulfanilamide fails from the therapeutic point of view, nevertheless neoprontosil appears to be of importance as a substitute when sulfanilamide is not well tolerated. It is our clinical impression that the therapeutic effect of neoprontosil given orally is obtained more slowly than that of sulfanilamide given by the same route.

The demonstration of sulfanilamide in the blood of a large number of patients treated with neoprontosil suggests that toxic effects may be the same as those when sulfanilamide is used. The toxicity of neoprontosil, however, appears to be low. Urinalysis has revealed no evidence of renal damage or irritation. In most instances in which frequent counts of blood cells,

further attempts to use sulfanilamide were attended by prompt occurrence of toxic manifestations it was decided to try neoprontosil orally. The result was striking; within a week the patient was having one or two formed stools daily and the bleeding had practically disappeared. Since that time improvement has been maintained following repeated courses of treatment with neoprontosil. Proctoscopic examination on several previous occasions had disclosed lesions of chronic ulcerative colitis with moderate activity, but proctoscopic examination five weeks after treatment with neoprontosil had been started revealed that the ulcerative process was quiescent.

Although chronic ulcerative colitis often is characterized by spontaneous remissions, nevertheless we felt that the prompt subsidence of symptoms in this case suggested that the drugs used had been of benefit. This opinion was shared by Dr. Bargen, who had observed this patient with us and further trial in other cases was undertaken with his approval.

We have treated with sulfanilamide, neoprontosil or di-methyl-di-sulfanilamide twelve patients who had chronic ulcerative colitis. In each case the diagnosis was confirmed by proctoscopic examination. In eleven cases roentgenograms of the colon were made and in eight of these there was evidence of chronic ulcerative colitis above the rectosigmoid region. In nine cases the chronic ulcerative colitis was uncomplicated by other disease and these have been grouped together in table 3.

In each of these nine cases improvement was definite. In six of these nine cases (cases 1, 2, 4, 5, 6 and 9, table 3) improvement was so striking and so prompt as to leave little doubt as to the value of the drug used. About the fourth day after treatment had been started the patients noted marked reduction in the number of stools and in the amount of bleeding, and this improvement continued until the patient was having one or two formed stools daily without gross blood. There was a tendency to slight recurrence of symptoms when administration of the drugs was discontinued, but this again was promptly controlled as soon as treatment was resumed. Gradually the interval between courses of treatment was lengthened without resulting recurrence of symptoms, and subsequent proctoscopic examination of four patients has given no evidence of chronic ulcerative colitis.

These patients have been observed only for from three weeks to eight months and for this reason our report is only a preliminary one. Because of the nature of the disease, it is likely that progress will not continue to be good in all these cases and we do not offer this treatment as a cure for chronic ulcerative colitis. We are inclined to believe that the drugs concerned are of value in the treatment of certain cases of chronic ulcerative colitis and that continued experience will enable a decision as to favorable types of cases for treatment. In a later paper, after further observation, we will publish a more detailed report.

In case 3 (table 3) improvement was just as striking as it was in the others for at least five months but thereafter there was some recurrence of symptoms, which have tended to persist in spite of further treatment with neoprontosil.

In case 7 the disease had been present for ten years with involvement of the entire colon. The patient had been bedfast for two months shortly before admission and had received considerable treatment without benefit. Following intensive treatment with neoprontosil, general improvement and lessening of the colonic symptoms resulted.

Case 8 must be regarded as the only failure in this group of cases. This patient was ill from stubborn chronic ulcerative colitis of long standing for which enterostomy had been suggested. His early response to di-methyl-di-sulfanilamide was

striking but did not persist. Peripheral neuritis necessitated immediate withdrawal of the drug. Subsequently enterostomy was performed and when he was dismissed from the clinic he had nearly recovered from the peripheral neuritis.

Table 4 represents three patients who had other disease besides chronic ulcerative colitis. In two of these, and possibly in all three, the other disease was such as to prevent the persistent improvement noted in the uncomplicated cases.

In case 10 (table 4) improvement was temporary. Marked diverticulosis of the sigmoid and descending colon possibly interfered with the treatment of the chronic ulcerative colitis.

In case 11 (table 4) chronic ulcerative colitis complicated biliary cirrhosis. The colitis responded favorably, although not completely, to the use of neoprontosil but the serious biliary cirrhosis prevented adequate treatment of the colitis.

In case 12 (table 4) improvement followed treatment with neoprontosil. However, because of exacerbation of symptoms and the presence of a mass in the right side of the abdomen, another roentgenogram of the colon was made. This disclosed the presence of a carcinoma of the colon as a complication of the ulcerative colitis. This finding was confirmed at operation.

TABLE 4.—Complicated Chronic Ulcerative Colitis Treated with Neoprontosil (Prontosil Soluble) or Similar Compounds

Case	Complication	Duration of Illness, Yr.	Result of Treatment	Period of Observation, Mo.	Drug Used	Toxic Reactions	Comment
10	Marked diverticulosis of colon	¼	Temporary improvement	2½	Neoprontosil	None	Symptoms recurred
11	Chronic biliary cirrhosis	½	Temporary improvement	8	Sulfanilamide Neoprontosil	Moderate None	Symptoms of colitis improved; inadequate treatment permitted
12	Multiple carcinomas of colon	5	Temporary improvement	3	Neoprontosil	None	Symptoms recurred and progressed

Only brief comment will be made concerning dosage, drug used and selection of patients suitable for treatment. Most of the patients received from 3.25 to 5 Gm. of sulfanilamide or neoprontosil daily for from ten days to two weeks. The same course was repeated several times, with intervals of a week or two between courses, and then the interval between treatments was gradually lengthened. At present we are modifying this plan somewhat by continuing administration of the drug in reduced dosage during what were previously the rest periods of the first few weeks of treatment.

As has been pointed out previously, neoprontosil possesses characteristics which make it the sulfonamide drug of choice in treatment of such conditions as chronic ulcerative colitis wherein prolonged therapy is indicated and severe toxic reactions may have serious consequences. Its lack of toxicity is evident in table 3.

Some of our associates at the Mayo Clinic have noted less favorable results than those we have had in cases of chronic ulcerative colitis in which treatment has been by means of the drugs under consideration. They have called attention to the occurrence of fatal jaundice in two such cases in which sulfanilamide was administered. In one case it is doubtful whether the sulfanilamide played an important role in the fatal result. The patient was very ill with fever, marked leukocytosis



and severe secondary anemia. In five days only 50 cc. of 5 per cent solution of neoprontosil and 140 grains (9 Gm.) of sulfanilamide were administered; jaundice was not noted until ten days after administration of the drugs had been discontinued. In the other case, however, it is probable that sulfanilamide was responsible for the fatal jaundice although it is reasonable to assume that the liver of this acutely ill patient had been damaged previously and that this injury made her particularly susceptible to the toxic action of sulfanilamide.

Such catastrophes demonstrate the necessity of care in selection of patients for treatment and in selection of the drug to be used. A patient who is not too ill and whose disease is of relatively mild degree offers the best prospect of improvement and presents a good margin of safety should a toxic reaction occur. Most of the patients in our series of cases have been carefully selected and are of this type.

Apparently sulfanilamide, neoprontosil and di-methyl-di-sulfanilamide are of value for treatment in selected cases of chronic ulcerative colitis. Di-methyl-di-sulfanilamide, however, should not be used at present because of the danger of peripheral neuritis which its use entails. Neoprontosil usually is preferred to sulfanilamide because it is better tolerated by the patient who has chronic ulcerative colitis and because it seems to be adequately effective.

#### SUMMARY

We have mentioned the use of sulfanilamide, di-methyl-di-sulfanilamide and neoprontosil by oral administration in the treatment of various infections. Sulfanilamide, although apparently possessing therapeutic advantages over the latter two preparations, nevertheless appears to have more of a tendency to produce toxic manifestations. Di-methyl-di-sulfanilamide, because of a tendency to produce peripheral neuritis, is contraindicated for general use at this time. Neoprontosil administered orally, while apparently less effective therapeutically than sulfanilamide, seems to be less likely to produce toxic manifestations and therefore is of value in some instances wherein sulfanilamide cannot be satisfactorily given. Certain cases of chronic ulcerative colitis seem to offer a favorable field for the use of neoprontosil or the cautious administration of sulfanilamide.

#### ABSTRACT OF DISCUSSION

DR. DWIGHT L. WILBUR, San Francisco: Sulfanilamide and its related compounds apparently possess greater value as chemotherapeutic agents than any other group of drugs developed since the synthesis of the arsenicals of the arsphenamine group. To some degree it is unfortunate that the almost universal use of the drug in the treatment of infections has occurred prior to the development of more adequate knowledge of the pharmacologic effects of this group of drugs. Because of this lack of knowledge, positive answers cannot be given to such important questions as the dosage of sulfanilamide which is adequate, as to the values for sulfanilamide in the blood which must be reached to insure a maximum therapeutic response, as to the interval of time over which the drug must be given, and as to the toxic effects of the drug and their prevention. The results which Dr. Bannick and his associates have presented are of great interest. They substantiate previously made reports of success of sulfanilamide in the treatment of a variety of infections and they add reports of the possible therapeutic value of sulfanilamide in chronic ulcerative colitis. It will be interesting to see whether the latter results can be duplicated by others and if they will persist for longer than a few months after treatment with sulfanilamide has been discontinued. It is important that

in the treatment of acute infections with sulfanilamide good results are obtained within a few days if the dosage is adequate. If the drug is administered in large doses and there is no effect on the acute infection within a few days, it is quite likely that the drug will be ineffective and it should be discontinued. Any one who has used sulfanilamide in more than a few cases is aware of some of the toxic manifestations which not uncommonly result and which lead to nausea, vomiting, vertigo, cyanosis, headache and nervous symptoms. Because these toxic manifestations are relatively common it is essential that every patient who receives the drug be under the daily observation of his physician. Two of the undesirable effects of the drug may be very simply controlled. By the simultaneous administration of sodium bicarbonate in relatively small doses one may overcome the acidosis which constantly accompanies administration of sulfanilamide. Cyanosis, which is due to the formation of methemoglobin, may be controlled by the administration intravenously to adults of 50 cc. of 1 per cent methylene blue.

DR. EDWIN E. OSGOOD, Portland, Ore.: Such studies are often hard to evaluate because of the difficulty of securing adequate controls. I have no clinical experience with these preparations but have used the method of marrow culture to make a comparative study of the same drugs. Marrow cultures infected with beta hemolytic streptococci were mixed thoroughly in one vial and subdivided into a series of vials, one of which was left as a control, and to the others concentrations of prontosil soluble (the disodium salt of 4-sulfamido-phenyl-2'-azo-7'-acetyl-amino-1'-hydroxynaphthalene-3',6' disulfonic acid), 1:10,000 sulfanilamide and other sulfanilamide derivatives were added. The concentrations of the more complex compounds were so calculated that the amount of sulfanilamide which could theoretically be derived from each was the same, namely 1:10,000. Pour plate colony counts were made at intervals. In these experiments sulfanilamide itself proved superior to the other preparations studied in the concentrations employed, but all the preparations were definitely of value, while they have practically no effect in ordinary bacteriologic medium. These experiments would seem to suggest that the effectiveness of the more complex compounds could be explained by the sulfanilamide liberated from them. It is my impression that the belief that prontosil soluble might be more effective than sulfanilamide has been based on the assumption that a concentration of 1:10,000 sulfanilamide was essential for effective action and the observation that doses of prontosil soluble which could not possibly give rise to that concentration of sulfanilamide were effective. In our marrow cultures, however, 1:100,000 sulfanilamide was sufficient for sterilization to occur in the majority of the cultures inoculated with small numbers of streptococci. The authors have arrived at the same plan of sulfanilamide therapy that our marrow culture studies showed to be desirable, namely that administration be begun promptly, that it be given at frequent intervals, preferably every four hours, day and night, and that the drug administration be continued until the cultures are negative even though the clinical symptoms have disappeared. If the authors' studies lead to a method of value in ulcerative colitis it is a very important contribution because this disease is difficult to control. Even though prontosil soluble is less effective in our marrow cultures than corresponding doses of sulfanilamide, it does not necessarily follow that it has no place in therapy since it may be of value given by mouth in the occasional patient who finds sulfanilamide too irritating to the stomach.

DR. RUSSELL L. HADEN, Cleveland: Dr. E. N. Collins of the Cleveland Clinic has used sulfanilamide in the treatment of eleven cases of chronic ulcerative colitis during the past year. The results have been excellent in eight cases. The drug has been administered by mouth and by retention enema.

DR. E. G. BANNICK, Seattle: I want to call attention to the importance of clinical observations in determining the true value of any new drugs such as these. It is not possible to determine accurately what the clinical results are going to be from the standpoint either of therapeutic effectiveness or of toxicity by experimental methods alone. This fact is clearly shown in the use of disulfanilamide. This drug has been

carefully studied by animal experimentation, in which it was shown to be much less toxic than sulfanilamide; and yet it was not until it had been tried clinically that the occurrence of peripheral neuritis was noted following the administration of the drug in some patients. I want again to emphasize the importance of proper selection of patients for the use of these drugs in the treatment of ulcerative colitis. I believe these drugs are of real value in the treatment of some patients afflicted with this disease, but it must be cautiously administered.

## VITAMIN A DEFICIENCY AND DARK ADAPTATION

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Night blindness or hemeralopia as the result of qualitatively inadequate dietaries has been recognized from the time of Hippocrates.<sup>1</sup> However, for many years this condition was considered of rare occurrence except in certain communities or during periods of fasting, famine or war.

The recent reports by Jeans and his co-workers,<sup>2</sup> Jeghers,<sup>3</sup> Park,<sup>4</sup> Corlette and his associates,<sup>5</sup> Barborka<sup>6</sup> and others suggest that this condition is relatively frequent. The literature is in agreement as to the infrequency of frank cases of night blindness associated with xerophthalmia, xerosis and keratomalacia in the United States. Each of these workers was tested for impaired dark adaptation by means of an instrument designed for clinical use and known as the biophotometer. This instrument purports to determine vitamin A deficiency by measurement of the degree of impairment of the light threshold and the rate and degree of dark adaptation. Other means for testing dark adaptation have been utilized in the past. Among these are the glowing platinum wire,<sup>7</sup> the Tscherning glasses,<sup>8</sup> and the Edmund test letters.<sup>9</sup> Since the introduction of the Birch-Hirschfeld<sup>10</sup> photometer several others have been recommended.<sup>11</sup>

It is not in the scope of the present paper to review all the scientific literature pertaining to dark adaptation

and its measurement, or the relationship between vitamin A deficiency and abnormalities of vision. Those interested may consult the articles by Adams,<sup>12</sup> Hecht,<sup>13</sup> Wald,<sup>14</sup> Fridericia and Holm,<sup>15</sup> Holm<sup>16</sup> and Tansley.<sup>17</sup>

Thus far only six groups of workers<sup>18</sup> have reported the results of their studies pertaining to the relation of vitamin A to dark adaptation as measured by the biophotometer, although it is well known that many are working with this instrument. Only one of the clinical reports, that of Palmer and Blumberg,<sup>18</sup> has criticized the use of the biophotometer as a test for vitamin deficiency. In making a second such report we do so not in a spirit of destructive criticism but in an effort to clarify certain problems that became manifest to us while we were using the apparatus.

### PROCEDURE

Our first group studied was composed of twenty apparently healthy graduate students between the ages of 21 and 45. Daily readings were made with the biophotometer. The readings were obtained on each person at the same hour for ten consecutive days. We followed the technic prescribed by Jeans, Blanchard and Zentmire<sup>2</sup> with two exceptions: One was that each day before entering the dark room the subject sat for five minutes in a room with a known constant illumination. The other exception was that we repeated the three minute light exposure. This provided us with a series of readings as follows:

1. Immediately after entering the dark room.
2. Five minutes after entering the dark room.
3. Ten minutes after entering the dark room.  
Light for three minutes.
4. Thirty seconds after light.
5. Three minutes after light.
6. Six minutes after light.
7. Ten minutes after light.  
Light for three minutes.
8. Thirty seconds after light.
9. Three minutes after light.

The second group of persons whom we studied consisted of 123 sophomore medical students between the ages of 19 and 34 years. The same routine was followed and two sets of readings were made on each student. The second set was obtained one week after the first at the same hour of day. All our data were then subjected to statistical analysis. This was done because we felt that the objection to most of the work published in connection with the biophotometer is that conclusions have been drawn not from numerical treatment of readings but from purely intuitive interpretation of curves. The standards used have been obtained by dividing large groups of subjects into low,

From the Department of Physiology and Pharmacology, Northwestern University Medical School.

1. Littré: *Oeuvres complètes d'Hippocrate* 9: 159, 1839-1861.
2. Jeans, P. C., and Zentmire, Zelma: A Clinical Method for Determining Moderate Degrees of Vitamin A Deficiency, *J. A. M. A.* 102: 892-895 (March 24) 1934; The Prevalence of Vitamin A Deficiency Among Iowa School Children, *ibid.* 106: 996-997 (March 21) 1936.
3. (a) Jeghers, Evelyn, and Zentmire, Zelma: Dark Adaptation and Vitamin A, *ibid.* 108: 451-458 (Feb. 6) 1937.
4. Park, I. O.: Preliminary Observations on Vitamin A Deficiency as Shown by Studies with the Visual Photometer, *J. Oklahoma M. A.* 28: 357-364 (Oct.) 1935; Further Observations on Vitamin A Deficiency as Shown by Studies with the Visual Photometer, *ibid.* 29: 129-141 (April) 1936.
5. Corlette, M. B.; Youmans, J. B.; Frank, Helen, and Corlette, Mildred G.: Photometric Studies of Visual Adaptation in Relation to Mild Vitamin A Deficiency in Adults, *Am. J. M. Sc.* 195: 54-65 (Jan.) 1938.
6. Barborka, C. J.: Treatment by Diet, ed. 3, Philadelphia, J. B. Lippincott Company, 1937, p. 12.
7. Aubert, H.: *Physiologie der Netzhaut*, Breslau, 1865.
8. Tscherning, M.: Question of Adaptation of Vision, *Acta ophth.* 1: 265-267, 1924 (in French).
9. Edmund, Carsten: Some Methods of Measuring Dark Vision, *Acta ophth.* 3: 153-169, 1925.
10. Birch-Hirschfeld, A.: Ueber Nachtblindheit im Kriege, *Arch. f. ophth.* 92: 18 (Dec.) 1916.
11. Ferree, C. E., and Rand, G.: The Testing of Fitness for Night Flying: The Light Sense, *Am. J. Ophth.* 20: 797-808 (Aug.) 1937.
12. Feldman, J. B.: Instrument for Determining Course of Dark Adaptation and for Measuring Minimum Light Threshold, *Arch. Ophth.* 32: 81-85 (July) 1934. Hecht, Selig: Personal communication to the authors.

12. Adams, D.: Dark Adaptation: A Review of the Literature, Medical Research Council, Special Report Series 127, London, 1929.

13. Hecht, Selig: Rods, Cones and the Chemical Basis of Vision, *Physiol. Rev.* 17: 239-290 (April) 1937.

14. Wald, George: Carotenoids and the Visual Cycle, *J. Gen. Physiol.* 19: 351 (Nov.) 1935.

15. Fridericia, L. S., and Holm, E.: Experimental Contributions to the Study of the Relation Between Night Blindness and Malnutrition, Influence of Deficiency of Fat-Soluble A Vitamin in the Diet on the Visual Purple in the Eyes of Rats, *Am. J. Physiol.* 73: 63-78 (June) 1925.

16. Holm, E.: Demonstration of Hemeralopia in Rats Nourished on Foods Devoid of Fat-Soluble A Vitamin, *Am. J. Physiol.* 73: 79-84 (June) 1925.

17. Tansley, Katherine: The Regeneration of Visual Purple, Its Relation to Dark Adaptation and Night Blindness, *J. Physiol.* 71: 442-458 (April) 1931.

18. Palmer, C. E., and Blumberg, Harold: The Use of a Dark Adaptation Technic in the Measurement of Vitamin A Deficiency in C. . . . . 2: 1403-1418 (Oct.) 1937. Jeans and Zentmire.<sup>2</sup> Jeghers.<sup>3</sup> Park.<sup>4</sup> Barborka.<sup>6</sup>

midzone and high according to their readings, and the important logical step of substituting the word "subnormal" for the word "low" has not been subjected to critical analysis. We felt it necessary to determine whether any given subject would give constant readings on the machine and whether the machine was sufficiently reliable to permit detection of day to day variations in given subjects, and significant differences among differ-

curve whose equation we were able to obtain in the case of our own instrument. This is:

$$(b-x)$$

$$\text{or } \log y = (b-x) \log a$$

$y$  = brightness of test light in millifoot candles  
 $x$  = dial reading  
 $a$  = constant = 1.096  
 $b$  = constant = 69.47

The properties of this equation are such that when a series of human subjects are rated according to their biophotometer performance, in terms of millifoot candles, the supernormal and normal readings are crowded together into a very narrow zone while the subnormals appear conspicuously isolated. In an effort to obviate this some investigators have plotted their results on semilogarithmic paper. This does obviate the crowding of normal and supernormal readings. However, one could avoid the two successive steps by simply working with the dial readings that one started with. Table 2 shows that index B yields a symmetrical distribution in which the supernormal, normal and so-called subnormal readings are all visible. It should be noted that if this were a set of measurements on height, weight or other dimensions the persons in

TABLE 1.—Reliability of Successive Biophotometer Readings

Reading	Self Correlation of 25 Subjects by the Rank-Order Method	Average of Probable Error of the Mean of 10 Readings on Each of 20 Subjects
1.....	0.08*	0.51*
2.....	0.67	0.36†
3.....	0.62	0.26†
4.....	0.53	0.62*
5.....	0.41	0.41†
6.....	0.45	0.36†
7.....	0.36*	0.23

Relative reliability of successive biophotometer readings.

\* Least reliable as judged by indicated criteria.

† Chosen as most reliable and used in formulating index B.

Index B = sum of readings 2, 3, 5, 6.

Self correlation of twenty-five pairs of values of B = 0.803.

ent subjects. Our first step was to calculate the probable error of each one of the nine readings obtained on the ten consecutive days for the twenty graduate students. We also determined the self correlation of pairs of readings from the entire 143 subjects studied; this statistical device is described by Sorenson.<sup>19</sup>

#### DATA AND COMMENT

The first fallacy encountered arose from the fact that three of the most conspicuous points on the curve obtained by plotting the readings on the photometer were the most unreliable. These points are given by readings 1, 4 and 7 (table 1). Unless the data are studied in this manner one is easily deceived as to the reliability of the readings obtained. The narrow range in which a given reading must fall creates a false impression of constancy; the method of self correlation reveals how meaningless this constancy is. Table 1 also shows that the most reliable reading is not 4 (on

TABLE 2.—Frequency-Distribution of Index C\* Showing Comparative Symmetry Obtained by Direct Use of Biophotometer Dial Readings

Index C	Frequency	Index C	Frequency
170-179.....	1	240-249.....	22
180-189.....	0	250-259.....	11
190-199.....	7	260-269.....	9
200-209.....	9	270-279.....	2
210-219.....	20	280-289.....	1
220-229.....	23	290-299.....	1
230-239.....	16	300-309.....	1
Total.....			123

\* Average of first two values of index B for each of 123 subjects.

which most observers place reliance) but readings 2, 3, 6 and possibly 5. From these four we obtained by simple addition a value which we called index B. It gives a self correlation of 0.805, which is high enough to be passable.

The second fallacy is involved in the translation of dial readings into millifoot candles. This is done by means of a table supplied by the manufacturers. Graphing the figures in the table gives an exponential

TABLE 3.—Results of Tests in Twenty-Two Cases

Subject	Readings	Comment
4	40 31 22 26	Effect of centripetal drift on the status of subjects rated as "supernormal" and "subnormal" on the basis of a test strongly affected by chance errors.
9	31 35 33 25	
14	26 27 30 32	
20	35 30 31 32	
23	33 30 36 28	
28	35 35 39 35	Each of the twenty-two subjects was rated at four different sittings according to reading 4 on the biophotometer; none received any therapy; nevertheless the five subjects who did worst at the first two sittings showed a satisfactory "improvement" at the third and fourth sittings; for the same reason, the five who did best at the first two sittings were adversely affected:
30	28 34 32 35	
32	26 29 29 25	
33	34 27 30 33	
40	26 38 32 28	
42	25 33 30 31	
46	33 30 26 30	
54	32 27 34 28	
58	32 33 32 25	
60	28 30 25 27	
62	25 34 26 32	
92	27 24 26 28	
94	23 27 26 29	
96	32 33 31 36	
101	24 32 32 27	
108	28 31 29 29	The average for the entire group remained constant: 29.9, 30.0, 30.4, 29.6.
143	30 29 35 29	

the lower percentiles would not necessarily be called subnormal. In short, it is necessary to recognize the possibility that constitutional factors may be responsible for some of the individual differences.

A third fallacy assumes a particularly striking form as a result of the conspicuous position given to the so-called subnormal readings when the measurements are stated in terms of millifoot candles. According to some observers when their "subnormal subjects" are given halibut liver oil or vitamin A in any other form they promptly show a striking improvement. Table 3 shows that they must by all the laws of probability show an equally striking improvement if left untreated. This phenomenon is reported in more detail in a recent article by Jung.<sup>20</sup> This fallacy arises whenever subnormal subjects are selected from a large group by a test which is strongly affected by chance errors, as we have shown reading 4 to be. The fallacy can be avoided by subdividing the subnormal subjects into two groups, one part of the group being used as controls, as we have done in a series now being studied. This has been neglected in two published articles.<sup>21</sup> We have proposed for this fallacy the term "centripetal

20. Jung, F. T.: Centripetal Drift: A Fallacy in the Evaluation of Therapeutic Results, *Science* 87: 461-462 (May 20) 1938.  
 21. Jeghers, J. A. Corlette, Youmans, Frank and Corlette.

19. Sorenson, Herbert: *Statistics for Students of Psychology and Education*, New York, McGraw-Hill Company, 1936, pp. 399 ff.

drift" because it affects the upper as well as the lower percentiles in any distribution; it is a simple consequence of the laws of probability. If biophotometer readings are translated into millifoot candles the supernormal readings are so crowded against the normal, to begin with, that the effect on the supernormal readings escapes observation.

TABLE 4.—*Correlation of W/7 (Estimated Habitual Daily Intake of Vitamin A in International Units) with Index C (Number Expressing Facility of Dark Adaptation as Measured by Biophotometer)*

F/5	Index C															Sum
	175	185	195	205	215	225	235	245	255	265	275	285	295	305	315	
1,500	..	..	1	2	2	1	..	1	2	1	..	..	..	..	..	10
2,500	..	..	1	1	4	6	4	6	2	1	1	..	..	..	..	26
3,500	..	..	..	1	5	2	3	2	1	2	1	..	..	..	..	17
4,500	..	..	..	..	3	2	3	3	1	1	..	..	..	..	..	13
5,500	..	..	1	1	3	4	2	3	..	1	..	..	..	..	..	15
6,500	..	..	1	1	2	..	2	1	1	..	..	..	..	..	..	8
7,500	..	..	1	1	..	1	1	..	1	..	..	..	..	..	1	6
8,500	..	..	..	2	..	..	..	1	..	..	1	1	..	..	..	5
9,500	1	..	1	..	..	1	1	1	..	..	..	..	1	..	..	6
10,500	..	..	..	..	..	1	..	..	2	1	..	..	..	..	..	4
11,500	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1
12,500	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
13,500	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1
14,500	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
15,500	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
16,500	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
17,500	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1
Sums	1	0	6	9	30	19	17	18	10	7	3	1	1	1	1	113

N = 113; r = 0.02 (correlation coefficient).

Finally we reach the original purpose of our study, which was the correlation of dietary intake of vitamin A with the dial readings to determine whether such a correlation is significant. The medical students studied were asked to fill out carefully formulated questionnaires on which they listed in detail their total food intake for five days. From these reports we calculated their intake of vitamin A as international units per day, using the tables compiled by Eddy and Dalldorf.<sup>22</sup> Lowest values were selected for each food; therefore, the total represents the minimal rather than the most probable intake. When the daily intake was plotted against index C (latter obtained by averaging index B obtained on first two readings by photometer) it became evident at once that the correlation was near zero (table 4). For the 113 subjects who submitted complete reports the correlation coefficients proved, in fact, to be +0.02. It seemed possible that the five day period might not represent the habitual gastronomic life of the students; hence we asked each one to list separately an estimate of the usual weekly intake of those foods known to be richest in vitamin A. Plotting the results against index C we again found an insignificant correlation, i. e., +0.06 for 116 subjects (table 5). The results at first led us<sup>23</sup> to conclude that in the subjects we had studied there was no correlation between dietary vitamin A and dark adaptation and that the chief difficulty in the way of revealing such a correlation, if it did exist, was the inaccuracy of the dietary calculations. We are now forced to conclude that this is not entirely true but that the chief difficulty was in the method we used for measuring dark adaptation.

It should be noted that the daily intake of vitamin A for the entire group ranged from at least 1,650 to 9,725 international units. The report of Jeghers on a similar study indicated that the mode for his sub-

normal and normal subjects combined was from 3,001 to 4,000 international units; for ours it was approximately the same. This indicates that our subjects were obtaining, as were those of Jeghers, a better than "physiologic minimum" of vitamin A in the diet.<sup>24</sup>

In addition to the dietary information obtained from the questionnaires, each student was asked to answer specific questions as to the following:

1. Ability to see at night.
2. Ability to drive an automobile at night.
3. The time required for him to see in a darkened theater.
4. Presence of lacrimation.
5. Dryness of eyeballs.
6. Burning of eyes.
7. Dryness, itching or scaling of the skin.
8. Presence of any skin lesions.
9. Dryness and falling of the hair.
10. Occurrence of headaches.
11. Weakness or excess fatigue.
12. Loss of weight.
13. Frequency of colds.
14. Presence of constipation.
15. Use of laxatives.
16. Appetite, dyspepsia and the like.
17. Chronic disease (sinusitis, bronchitis and the like).

Tabulation of the answers to the preceding questions revealed nothing significant in relation to the amount of vitamin A ingested or to the biophotometer readings. In fact, many whose vitamin intake was at a high level recorded the presence of some of the symptoms generally considered indicative of vitamin A deficiency. The reverse was likewise true. Calculation of "biserial r" by the method described by Sorenson<sup>19</sup> confirmed the impression gained by simple inspection of the tabulated data. In spite of the fact that our

TABLE 5.—*Correlation of F/5 (Estimated Daily Intake of Vitamin A in International Units During Five Day Observation Period) with Index C (Number Expressing Facility of Dark Adaptation as Measured by Biophotometer)*

W/7	Index C															Sum
	175	185	195	205	215	225	235	245	255	265	275	285	295	305	315	
500	..	..	..	1	..	..	..	1	..	..	1	..	..	..	..	..
1,500	..	..	1	1	1	..	..	2	3	..	1	..	..	..	..	..
2,500	..	..	..	..	5	5	1	2	3	..	..	..	..	..	..	..
3,500	..	..	..	1	4	5	4	4	..	1	1	..	..	..	..	..
4,500	..	..	..	..	4	3	1	2	1	3	..	..	..	..	..	..
5,500	..	..	2	2	2	4	4	2	4	2	..	..	1	..	..	..
6,500	1	..	..	1	3	..	3	..	..	..	..	..	..	..	..	..
7,500	..	1	2	..	2	2	4	..	1	..	..	..	..	..	..	..
8,500	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..
9,500	..	..	1	1	..	..	1	1	..	1	..	1	..	..	..	..
10,500	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
11,500	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..
12,500	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
13,500	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14,500	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15,500	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16,500	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17,500	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18,500	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..
Sums	1	0	6	8	18	23	14	21	11	8	3	1	1	1	1	116

N = 116; r = +0.06 (correlation coefficient).

subjects were normal young adults and that much of the questionnaire was of a subjective nature, we believe that any trends toward correlation could have been easily detected.

#### SUMMARY

Our original purpose in this study was to determine whether a correlation exists between dietary intake of vitamin A, biophotometer readings and clinical symptoms. If such a correlation exists it would be possible

22. Eddy, W. H., and Dalldorf, Gilbert: *The Avitaminoses*, Baltimore, Williams & Wilkins Company, 1937, p. 316-321.

23. Jung, F. T., and Isaacs, B. L.: *Dark Adaptation and Intake of Vitamin A*, Proc. Am. Phys. Soc., Baltimore, April 1938.

24. Booher, Lela A.: *Vitamin A Requirements and Practical Recommendations for Vitamin A Intake*, J. A. M. A. 110:1920 (June 4) 1938.

to utilize this photometer clinically for the detection of deficiency of vitamin A. Very early we found that it was necessary to know more than we did about the performance of the apparatus before the data obtained could be wisely interpreted. This led us into an analysis which indicated a number of fallacies, the significance of which is readily apparent.

#### CONCLUSIONS

1. The intake of vitamin A of 143 healthy medical students as determined by calculation from their diets ranged from at least 1,650 to 9,725 international units per day.

2. No correlation could be detected between dietary vitamin A and biophotometer readings. Neither could a correlation be noted in our subjects between vitamin A intake and clinical signs and symptoms of A deficiency.

3. We believe that nothing is gained by translating dial readings of the biophotometer into millifoot candles, because errors are introduced and the effects of certain fallacies are exaggerated thereby.

4. We also believe that the criteria generally chosen for the recognition of vitamin A deficiency by means of the biophotometer are not the most reliable criteria.

5. Far more study is essential before the biophotometer or any similar instrument can be used per se for the detection of vitamin A deficiency in the human being.

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#### DURATION OF SMALLPOX IMMUNITY

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AND

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MANHATTAN, KAN.

In 1936 a study was made<sup>1</sup> of smallpox immunity in 1,053 matriculating college students at Kansas State College. A similar study of 986 students made in September 1937 with additional data on the duration of smallpox immunity and the effect of multiple vaccinations constitutes the basis of this report. Table 1 gives in tabulated form the detailed histories and results on the vaccinated group. This college age group was very largely derived from rural areas and small towns in Kansas.

Of the vaccinated group 74.9 per cent gave a positive history of previous vaccination against smallpox and had a visible scar; 3.3 per cent had not had a previous vaccination but gave a positive history of smallpox; 20.4 per cent had neither been vaccinated nor had smallpox but gave a positive history of chickenpox; 1.2 per cent gave an entirely negative history for previous vaccination against smallpox, smallpox and chickenpox.

The multiple puncture method of vaccination was employed on the skin over the insertion of the deltoid muscle. No dressings or protective shields were used and no secondary infections were encountered. No instance of generalized vaccinia occurred in the group vaccinated. Each student was examined on the second, fourth and seventh days and later if indicated after the date of vaccination. The results were recorded accord-

ing to the following classification: (a) Immune or immediate reaction: the development of a small area of redness with or without the presence of a papule, the height of the reaction being reached within twenty-four to forty-eight hours after vaccination. (b) Primary take: the formation of a papule, vesicle and pustule, the height of the reaction being reached within six to ten days after vaccination. (c) Secondary take: same as primary take except that it occurred in an individual with a visible vaccination scar or with pockmarks. (d) Accelerated reaction: same as primary take except that the reaction was less pronounced, developed more rapidly and disappeared in a much shorter period of time.

Of the vaccinated group 35.3 per cent had immune or immediate reactions, 39.8 per cent had accelerated

TABLE 1.—Histories and Results of the Vaccinated Group

Race	Sex	Age	Number Vaccinated	Medienl History			Results of Vaccination			
				Negative	Previous Vaccination	Smallpox	Chickenpox	Negative	Immune	Accelerated
Caucasian	♂	16	15	1	10	0	4	0	5	5
Caucasian	♂	17	124	13	95	0	25	12	43	51
Caucasian	♂	18	262	1	192	6	61	1	78	113
Caucasian	♂	19	151	1	109	4	37	1	55	58
Caucasian	♂	20	63	0	47	4	12	1	20	27
Caucasian	♂	21	40	0	31	3	6	0	13	17
Caucasian	♂	22	20	1	15	0	4	0	5	10
Caucasian	♂	23	14	0	8	3	3	0	1	8
Caucasian	♂	24	1	0	0	0	0	0	0	0
Caucasian	♂	25	0	0	0	0	0	0	0	0
Caucasian	♂	26	0	0	0	0	0	0	0	0
Caucasian	♂	27	1	1	0	0	0	0	0	0
Caucasian	♂	28	1	0	1	0	0	0	1	0
Negro	♂	18	1	0	0	0	1	0	1	0
Mongolian	♂	22	1	0	1	0	0	0	1	0
Caucasian	♀	16	10	0	9	0	1	1	6	2
Caucasian	♀	17	87	2	63	1	21	4	20	28
Caucasian	♀	18	111	1	92	5	13	3	51	42
Caucasian	♀	19	44	0	33	4	7	0	18	15
Caucasian	♀	20	10	0	9	0	1	0	7	2
Caucasian	♀	21	7	0	5	1	1	0	2	2
Caucasian	♀	22	5	0	3	1	1	0	1	2
Caucasian	♀	23	4	0	4	0	0	0	2	0
Caucasian	♀	24	1	0	1	0	0	0	0	0
Caucasian	♀	25	1	0	1	0	0	0	1	0
Negro	♀	18	1	0	1	0	0	0	1	0
Total.....			986	12	739	33	202	13	344	388

Chickenpox is recorded only in those cases in which there was a negative history of previous vaccination and smallpox.

reactions, 22.7 per cent had primary takes and 2 per cent had secondary takes. The results of the vaccinations of this group are in general similar to those obtained in the group vaccinated in 1936 (table 2). It may be noted that there are more primary takes recorded than there are students with an entirely negative history or with a history of chickenpox only. This result may be partly accounted for by Leake's<sup>2</sup> observation that smallpox does not immunize against vaccination quite as well as against itself. Thus, an individual who has had smallpox may have a primary take when vaccinated against smallpox.

Of the group vaccinated 64.5 per cent (primary takes, secondary takes and accelerated reactions) were in some degree susceptible to smallpox. Of the group previously studied (1936) 61.5 per cent were susceptible to smallpox in some degree. Of the students 74.9 per cent had previous vaccinations. In the former group 78.1 per cent had previous vaccinations.

From the Student Health Service, Kansas State College.  
The smallpox vaccine used in this study was generously supplied to us by the Kansas State Board of Health.  
1. Husband, M. W., and Loy, D. T.: Immunity to Smallpox, J. A. M. A. 109:1797 (Nov. 27) 1937.

2. Leake, J. P.: Questions and Answers on Smallpox and Vaccination, Pub. Health Rep. 42:221 (Jan. 28) 1927.



Histories of the dates of previous smallpox vaccinations apparently were accurately obtained from 720 students. Table 3 shows the duration of smallpox immunity in 661 members of this group who had had only one previous vaccination against smallpox. There is considerable variation in the individual cases, but

TABLE 2.—Comparison of 1936 and 1937 Groups

Year	Number Vaccinated	Per Cent with Previous Vaccination	Per Cent Susceptible to Smallpox
1936.....	1,053	78.1	61.5
1937.....	986	74.9	63.7

the average of the group shows about 20 per cent more students with complete immunity in the group vaccinated from one to five years previously than in the group vaccinated from six to ten years previously. After ten years the number with complete immunity does not decrease appreciably. It may be noted that in the one to five year group there is 1.5 per cent total loss of immunity (secondary takes) while in the six to ten year group there is 4 per cent total loss of immunity. The number of persons with complete immunity at similar periods after previous vaccination in this group is considerably lower than that given by Dearing and Rosenau,<sup>3</sup> who in their study of duration of smallpox immunity following vaccination show that 95 per cent of those vaccinated ten years or less after their vaccination had complete immunity and that of those vaccinated from ten to nineteen years after their first vaccination 67 per cent had complete immunity. The reason for this difference is not obvious but may be the difference in density of population of the areas from which the two groups were derived.

Of the 986 students in the vaccinated group only fifty-nine, or 5.9 per cent, had been vaccinated more than once previously. Only one of this group with

and there were no cases of secondary takes, whereas in the group with single previous vaccinations within one to five years there were 56.8 per cent with complete immunity and 1.5 per cent with secondary takes or total loss of smallpox immunity.

The results of this group of smallpox vaccinations show that there is a wide individual variation in the duration of smallpox immunity following vaccination, that the number of persons with complete immunity from one to five years after previous vaccination is greater in the group with multiple previous vaccinations than in the group with single previous vaccinations and that in general there would be an increase in the number of completely immune persons if each person was revaccinated once in every five years. These results agree generally with the opinion of Leake,<sup>2</sup> who states that the immunity to smallpox afforded by vaccination is lost by different persons at different rates and that each individual should be vaccinated ordinarily once in every five to ten years.

As in 1936, there were only a few students who refused vaccination. Woodward and Feemster<sup>4</sup> have shown definitely that the number of smallpox cases per unit of population is lower in those states with compulsory vaccination than in those states without com-

TABLE 4.—Comparison of Multiple and Single Vaccinations

Number of Previous Vaccinations	Number of Years Since Last Vaccination	Number Vaccinated	Results		
			Immune Reactions	Accelerated Reactions	Secondary Takes
2	1 to 5	52	41 (78.8%)	11 (21.1%)	0
1	1 to 5	264	150 (56.8%)	110 (41.6%)	4 (1.5%)
2	6 to 10	0	3	3	0

pulsory vaccination. In Massachusetts, where there is a compulsory smallpox vaccination law, there has been no case of smallpox reported to the state board of health during the past five years.<sup>5</sup> Since there is no provision for the ideal preventive procedure (compulsory vaccination) in the state of Kansas, we feel that a program of making smallpox vaccination available in an acceptable manner should meet with a favorable response from the inhabitants of the state and aid in the reduction of cases of smallpox.

#### SUMMARY

1. Of the students who matriculate at Kansas State College (a) approximately one fourth have never been vaccinated against smallpox, and (b) approximately two thirds are in some degree susceptible to smallpox.

2. Only 5.9 per cent of the 1937 group had been vaccinated more than once previously.

3. There are about 20 per cent more persons with complete immunity in the previously vaccinated one to five year group than in the group vaccinated from six to ten years previously.

4. There are about 20 per cent more persons with complete immunity in the multiple previously vaccinated group than in the once previously vaccinated group.

5. The method of noncompulsory vaccination used has proved to be almost 100 per cent acceptable to the student group.

4. Woodward, S. B., and Feemster, R. F.: The Relation of Smallpox Morbidity to Vaccination Laws, *New England J. Med.* 208: 317 (Feb. 9) 1933.

5. Woodward, S. B.: Personal communication to the authors in December 1937.

TABLE 3.—Duration of Smallpox Immunity

Number of Years Since Last Vaccination	Number Vaccinated	Results		
		Immune Reactions	Accelerated Reactions	Secondary Takes
1	98	73	25	0
2	48	25	23	0
3	30	15	13	2
4	34	14	19	1
5	54	23	30	1
1 to 5	264	150 (56.8%)	110 (41.6%)	4 (1.5%)
6	66	34	32	0
7	69	27	35	7
8	63	19	42	2
9	42	16	25	1
10	56	16	38	2
6 to 10	296	112 (37.8%)	172 (58.1%)	12 (4.0%)
10 to 15	85	35	49	1
Over 15	16	6	10	0
Over 10	101	41 (40.0%)	59 (59.0%)	1 (1.0%)

multiple previous vaccinations had been vaccinated more than twice. Table 4 gives a summary of the results of the vaccination against smallpox in this group and compares the duration of smallpox immunity in the single and multiple previously vaccinated groups. Of the group with multiple previous vaccinations within one to five years 78.8 per cent had complete immunity

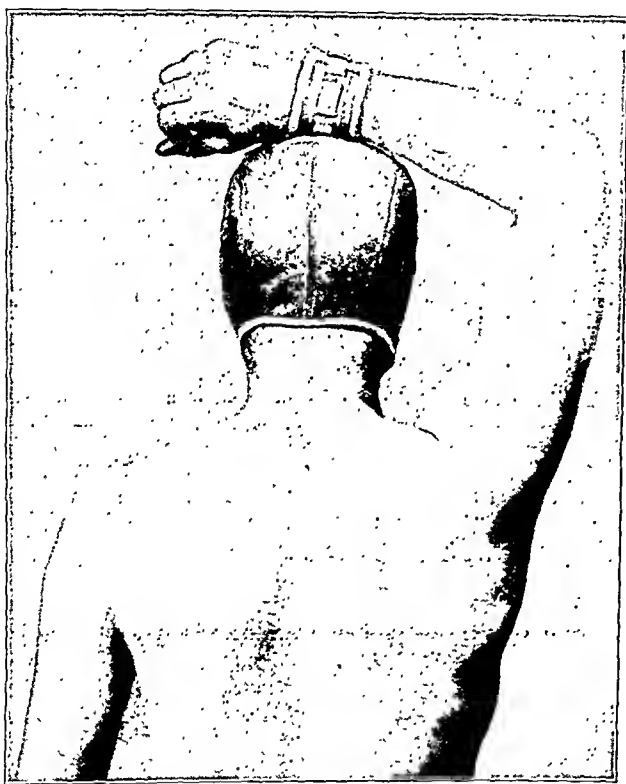
3. Dearing, W. P., and Rosenau, M. J.: Duration of Immunity Following Vaccination, *J. N. M. A.* 102: 1998 (June 16) 1934.

## Clinical Notes, Suggestions and New Instruments

### A SHOULDER ABDUCTION CAP

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The present methods of maintaining abduction of the shoulder in the ambulatory patient consist of abduction and airplane splints or plaster casts. The splints are very cumbersome and uncomfortable and require constant attention and adjustment. Plaster casts prevent the administration of physical therapy and active use, which are essential in many shoulder conditions. In fractures about the shoulder, where complete immobilization is desired, splints or casts are essential. However, there are many conditions in which abduction is the only indication. In these cases I have found the abduction cap here illustrated very efficient, allowing patients to be freely ambulatory and often attending to their business.



Application of shoulder-abduction cap.

As is noted in the accompanying illustration, the shoulder abduction cap consists merely of a canvas aviator-type cap and a padded leather wristlet. The cap buckles under the chin and should fit snugly. There is a reinforced loop on top of the cap through which the strap of the wristlet is threaded before it is buckled. At first I used the heavy leather cap worn by aviators but I have found that the ordinary canvas cap worn by boys in winter serves just as well and is not as heavy or as expensive.

I have used this cap with great satisfaction both to myself and to the patient in the following conditions:

1. Subdeltoid bursitis. In both traumatic and infectious bursitis, abduction of the shoulder is an essential part of the treatment. It has been especially useful in elderly persons who fall on the outstretched hand, sustaining both a Colles fracture and a subdeltoid bursitis. After the fracture has been reduced and a cast applied to the wrist, the arm is kept in abduction by the cap, and massage to the shoulder for a few days avoids

the stiff shoulder that is seen so often in an elderly person who sustains a Colles fracture and carries the arm in a sling.

2. Following manipulations for subdeltoid bursitis and "frozen shoulders."

3. Rupture of the supraspinatus tendon. As a postoperative form of fixation and abduction the cap has been ideal. In incomplete ruptures in which operative intervention is not necessary it also serves well. I have not had occasion to try it on infants following tenotomy of the sternomastoid muscle or tenotomies in birth palsy deformities, but I am sure that it could readily be used in these conditions. There will probably be other shoulder conditions in which the cap may be used with satisfaction both to the physician and to the patient.

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### CONCURRENT TIC DOULOUREUX AND MÈNIÈRE'S DISEASE TREATED SURGICALLY

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Since no report of a case has been found in which tic douloureux and Mènière's disease occurred synchronously and were relieved simultaneously in one operation, the case here presented is believed to be unique in medical literature. The patient experienced complete relief of both syndromes after the operation.

#### REPORT OF CASE

Mrs. G. H., a white woman aged 43, was admitted to the Tampa Municipal Hospital Dec. 14, 1937, complaining chiefly of vertigo and of tinnitus and deafness in the left ear.

About six years previously the patient had begun to have pain and tenderness over the left frontal part of the scalp and, a few months later, a dull aching pain in the left upper part of the face. Much dental work brought no relief, and the pain became progressively worse until it finally assumed the character typical of the tic douloureux, with shooting pains to the midline of the face and trigger zones. From time to time injections of alcohol were given peripherally; the last one, in October 1937, resulted in relief of the pain, which lasted until admission.

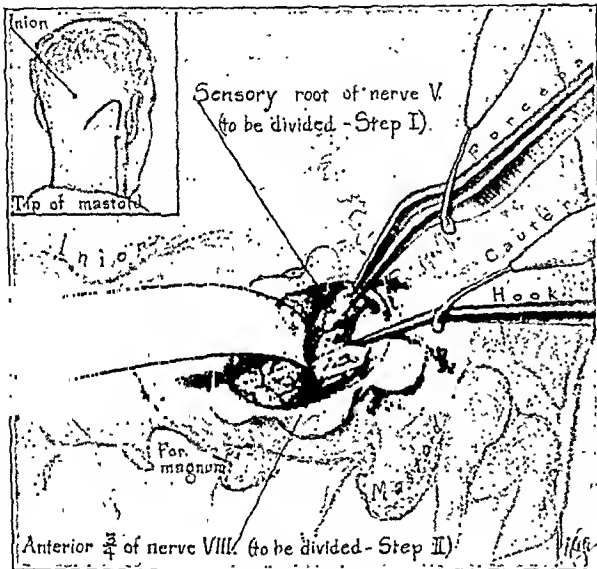
Three weeks before she entered the hospital, the patient stumbled on some steps and fell. She was unconscious for a few minutes, but no injury to her head was observed. For a number of weeks before this injury occurred she had had a ringing in her left ear, headache and some ataxia, characterized by "running into things." Two weeks before admission vertigo developed, with nausea and vomiting, severe headache on the left side and diplopia. She was unable to raise her head from the pillow without dizziness and nausea; her head would fall to the left; objects would rotate. Any sudden motion before her eyes or the turning of her eyes to the left produced vertigo and nausea. A spinal puncture one week before admission resulted in relief of the diplopia and diminution in the severity of the headache, but the other symptoms remained the same and the headache returned to its original intensity. For a month or more prior to admission the patient had suffered from general weakness, polydipsia, sensitiveness to cold and nervousness.

No member of the patient's family had ever had Mènière's disease or tic douloureux, and the family history was otherwise irrelevant. The past medical history showed that at the age of 11 the patient had received a head injury in the left occipital region from a blow. At that time she remained unconscious for twelve hours or more and complete paralysis of all extremities developed, the left side clearing more rapidly than the right. She was confined to her bed for almost a year as a result of this injury. At the age of 22 she married and shortly thereafter was subjected to a suspension of the uterus. Of six pregnancies, two resulted in miscarriages. Twelve years before admission some perineal work was done, and the tubes and ovaries were removed. Two years afterward a complete hysterectomy was performed, and six months later there developed on the left side a perinephric abscess, which was treated by incision and drainage.

The physical examination showed a considerable degree of tenderness of the left frontoparietal part of the scalp. There

was some paresis, with diminished sensibility over the left side of the face, but no muscular atrophy was noted. The pupils of the eyes were equal, reacting to light and in accommodation, but were slightly irregular in contour. There was no disturbance of motility, nor was nystagmus or exophthalmos present. The disks were normal, and the corneal reflex was intact. There was no tremor of the tongue, and it protruded in the midline. The upper teeth had been removed. In both ears the drum and canal were normal. Weber's sign was not present. The left ear showed a nerve deafness approximating 25 per cent. All tendon reflexes were equal but hyperactive. The abdominal reflexes were present and equal. There was no atrophy, and no pathologic reflexes were present. The finger-nose and knee-heel tests were done well. There was no adiadochokinesis. Romberg's sign was slightly positive, with an inclination of the body to fall to the right. Examination of the blood and spinal fluid gave negative results. The basal metabolic rate was minus 27 per cent.

A diagnosis of tic douloureux and Ménière's disease was made and was confirmed by Dr. Walter E. Dandy of Baltimore, to whom the patient was referred. Jan. 11, 1938, Dr. Dandy totally divided the left sensory root and partially divided the eighth



The operation.

nerve. The operation was followed by immediate relief of all symptoms, and they have not returned. The patient is now at home in complete comfort.

The accompanying drawing of the operation done by Dr. Dandy shows the proximity of the nerves involved and makes obvious the ease with which they may be divided in the same operation.

1019 Citizens Bank Building.

**Scientific Discoveries of Claude Bernard.**—It is now more than half a century since Bernard died and sufficient time has elapsed to permit an estimate of the value of his work. Physiologists are all agreed that in four different departments of their science the name of Claude Bernard stands at the head of the list of those who have made lasting contributions. These discoveries all belong to the first, or Collège de France, period and they are (1) the functions of the pancreas in digestion, (2) the glycogenic function of the liver, (3) the vasomotor system, (4) the action of certain poisons, notably curare and carbon monoxide. None of these discoveries came as a result of his earliest investigation, but, with the exception of the action of poisons, they were a natural sequel to his initial experimental work.—Olmsted, J. M. D.: *Claude Bernard, Physiologist*, New York, Harper & Bros., 1938.

## Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. HOWARD A. CARTER, Secretary.

### PACIFIC AIRVENT NOT ACCEPTABLE

Manufacturer: Pacific Manufacturing Corporation, 4223 Lake Street, Chicago.

The Pacific Airvent is an air filter designed to provide relief for sufferers from hay fever and asthma by removing a high percentage of the pollen, dust and dirt from the air in a given room. For efficient service, according to the firm, the unit will accommodate a room with air capacity of 8,000 cubic feet; this may be approximately 20 by 40 feet in dimensions. The unit proper is a cabinet which slips into a heavy gage metal base with felt bottom which may be fastened to almost any window sill. The exterior of the cabinet is finished in metal to prevent rusting while the inside is of seasoned wood. It is 24 inches wide by 18 inches deep by 12 inches in height and weighs approximately 60 pounds.

In order to make the apparatus useful for ventilation in winter as well as summer, it has been equipped with rubber insulation or weather-stripping. No-draft stoppers are placed between the top of the sash of the lower window and the pane of the upper window to prevent outside air from entering here when the unit is installed. Burglar latches are placed between the upper sash and top edge of the lower sash at either side of the window to prevent prowlers from raising the window higher.

In operation a damper lever, located under the top door of the cabinet, controls the amount of outside air admitted. This volume control regulates input at two speeds, high and low. The air is drawn into the unit over the top of the filter and through the fan blower housings. These consist of two Sirocco fans, placed one at either side of the motor. Their housings are insulated for acoustical purposes. The filtered and cleansed air enters the room through louvers in the grill work in the cabinet front which direct it up, down or straight ahead.

Wilson "spider-web" filters are supplied with the unit. The firm claims that these filters remove 97.47 per cent of the pollen from the air and 98 per cent of the dust, dirt and soot.

Electrical details are as follows: Reynolds motors are installed where units are to be used with alternating current. General Electric or Bodine motors are installed where direct current is required. On high speed the unit consumes less than 60 watts per hour. On low speed the unit consumes approximately 30 watts per hour. Alternating or direct current motors are optional. With pilot tube sets the Airvent produces over 300 C. F. M.'s. These tests were made by use of air duets divided evenly at the ends into small spaces. Tests were made in each space and averages taken from these tests.

Another Pacific Airvent feature, according to the firm, is the recirculation filter, which cleans the room air itself. This is done by closing the outside damper entirely and then lifting the door on top of the cabinet approximately two inches. The room air is then taken into the unit, filtered, cleaned and recirculated. Whether outside or inside air is used, it is said to be propelled gently to every part of the room, thereby eliminating drafts.

In order to substantiate the claims made for the filter, tests were made by an investigator acceptable to the Council. Although the unit appeared to be well constructed, the filtering effectiveness claimed by the manufacturer was not substantiated by the Council investigator. The filter is composed of a very loose network of coarse hairs impregnated with oil. Although there are evident microscopic openings in the filter, the manufacturer seems to expect that the devious paths through the hair and oil will trap most of the pollen. The investigator was not able to duplicate the firm's figures for percentage of pollen removed. In the Council's tests an average of 88 per cent of ragweed pollen was removed by the filter. This removal of pollen, in the opinion of the Council, is insufficient to alleviate hay fever symptoms.

The advertising matter submitted with the unit contained certain unsubstantiated claims such as the statements that the unit will save fuel and freshen air contaminated by cooking odors.

In view of the foregoing report, the Council on Physical Therapy voted not to include the Pacific Airvent filter in its list of accepted devices because the filtering mechanism is not efficient for removal of pollen and the advertising matter contains certain unsubstantiated statements.

## Council on Pharmacy and Chemistry

### NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

**ESTRONE (THEELIN).**— $C_{15}H_{22}O_2$ .—3-hydroxy 17-keto  $\Delta$  1,3,5-estratriene. A crystalline estrogenic steroid obtained from the urine of pregnancy. The estrogenic activity of 0.1 microgram (1 ten millionth of a gram) of a standard preparation of estrone constitutes 1 international unit. The terms

Estrone and Theelin are nonproprietary synonyms.

**Actions and Uses.**—Estrone (theelin) is used in the treatment of symptoms of the menopause, natural or artificial, of certain other conditions related to deficiency of estrogen, and of gonorrheal vaginitis in children. See general article Ovary, New and Nonofficial Remedies, 1938, p. 333.

**Dosage.**—In disturbances of the menopause 0.02 mg. (200 international units) to 1.0 mg. (10,000

international units) intramuscularly one or more times a week. The smaller doses may be administered in aqueous solution, the larger in oil. Estrone may also be administered in vaginal suppositories. Beginning doses should be small to test the response of the patient and the dosage must be adjusted to the response.

For gonorrheal vaginitis in children from 0.02 to 0.2 mg. (200 to 2,000 international units) in glycerogelatin suppositories, daily or as required. This may be supplemented by intramuscular injection of small doses of the oil solution, if necessary. Changes in the secondary sex organs may be produced by this therapy, particularly if it is too prolonged. These changes usually regress on cessation of treatment.

Estrone is effective by mouth if the dosage is adequate.

Estrone occurs as a white, odorless, well defined, crystalline substance. During heating on the microscopic heating stage, characteristic rearrangement of the crystalline structure takes place at 220, 240 and 256 C. The substance melts sharply at 260 C. ( $\pm 2$  degrees). Twenty mg. heated for five hours at 80 C. under vacuum of 2 mm. of mercury over phosphorus pentoxide gave no appreciable loss in weight. Practically insoluble in water; soluble in alcohol and in dioxane; also soluble in oils. Transfer approximately 0.01 Gm. of estrone accurately weighed to a 1 cc. microvolumetric flask; fill to the mark with freshly distilled dioxane and determine the optical rotation after the U. S. P. XI method, page 459, using a 2 dm. microtube: the specific rotation  $[\alpha]_D^{25}$  is +164.6 degrees ( $\pm 5$  degrees).

Dissolve about 0.09 Gm. of estrone in a pyridine (6 cc.) and acetic anhydride (2 cc.) mixture (3:1) and heat at 95 C. under a micro reflux condenser for twenty-four hours. Transfer the solution to a 250 cc. flask containing 100 cc. of ice-cold water and titrate with 0.1 normal sodium hydroxide: the acetic acid value is not more than 43 nor less than 41, equivalent to one acetylated hydroxyl group. [A blank determination must be made for pyridine acetic acid and anhydride] (J. Biol. Chem. 91: 991, 1931).

Dissolve approximately 0.05 Gm. of estrone in a pyridine (6 cc.) and acetic anhydride (2 cc.) mixture (3:1) and heat at 95 C. under a micro reflux condenser for twenty-four hours. Let stand at 37 C. for another twenty-four hours. Add 10 cc. of 50 per cent alcohol and evaporate under vacuum to a thick syrup. Add very gradually about 50 per cent alcohol (1 cc.) and set aside for crystallization. Filter the crystals and recrystallize twice from 95 per cent alcohol. The melting point of the monoacetate of theelin is 126 C.

Dissolve 0.05 Gm. of estrone and 0.05 Gm. of hydroxylamine in 10 cc. of 95 per cent alcohol; acidify with 1 cc. of concentrated acetic acid and heat under reflux for five hours. Add 10 cc. of water and recrystallize the precipitate thrice from 95 per cent alcohol. The melting point of the oxime is between 230 C. and 240 C. The micro Dumas nitrogen determination after the Pregl method gives a nitrogen content of not more than 5.2 per cent nor less than 4.6 per cent.

Transfer approximately 2 mg. of estrone, accurately weighed, to a previously weighed micro platinum boat, add 0.05 cc. of dilute sulfuric acid (1:5). Incinerate in the micro muffle oven: no residue should remain. Microcarbon and hydrogen analysis, according to Pregl's method, should give a carbon content of not more than 80.3 per cent nor less than 79.7 per cent, and a hydrogen content of not more than 8.5 per cent nor less than 7.9 per cent.

Estrone crystals exhibit a strong bluish-white fluorescence under filtered ultraviolet light.

The dosage forms of brands of estrone are biologically assayed, the assay being under control of the St. Louis University committee.

**Theelin-P. D. & Co.**—A brand of estrone (theelin)—N. N. R.

Manufactured by Parke, Davis & Company by license from St. Louis University under U. S. patents 1,967,350 and 1,967,351 (July 24, 1934; expire 1951). No U. S. trademark.

**Ampules Theelin Aqueous, 1 cc.:** Each cubic centimeter contains 0.02 mg. (200 i. u.) theelin in aqueous solution.

**Ampules Theelin in Oil, 1 cc.:** Each cubic centimeter contains 0.1 mg. (1,000 i. u.), 0.2 mg. (2,000 i. u.) or 1 mg. (10,000 i. u.) of theelin in a solution in peanut oil.

**Vaginal Suppositories Theelin:** Each suppository contains 0.2 mg. (2,000 i. u.) in a glycerogelatin base.

**ESTRIOL (THEEOL).**— $C_{15}H_{22}O_3$ .—3,16,17-trihydroxy  $\Delta$  1,3,5-estratriene. A crystalline estrogenic steroid isolated from the urine of pregnancy. Estriol is much less actively estrogenic than estrone. The terms Estriol and Theeol are nonproprietary synonyms.

**Actions and Uses.**—Estriol (theeol) is used orally in the treatment of the menopause, natural or artificial, of certain other conditions related to deficiency of estrogen, and of gonorrheal vaginitis in children. See general article Ovary, New and Nonofficial Remedies, 1938, page 333.

**Dosage.**—Orally from 0.06 to 0.12 mg. from one to four times a day, alone or as supplement to parenteral therapy.

Estriol occurs as a white, odorless, micro crystalline powder. During heating on the microscopic heating stage, rearrangement of the crystal structure takes place at 270 C. and 275 C. The substance melts sharply at 282 C. (rate of heating, U. S. P. XI, 4 degrees in one minute—Kofler microscopic heating stage). Twenty mg. of estriol heated for five hours at 80 C. under vacuum of 2 mm. over phosphorus pentoxide gives no appreciable loss in weight. Practically insoluble in water; soluble in alcohol and dioxane; also soluble in oils. Transfer approximately 0.04 Gm. of estriol, accurately weighed, to a 1 cc. microvolumetric flask; fill to the mark with freshly distilled dioxane and determine the optical rotation after the U. S. P. XI method, page 459, using a 2 dm. microtube. The specific rotation  $[\alpha]_D^{25}$  is +58 degrees ( $\pm 5$  degrees).

Dissolve approximately 0.06 Gm. of estriol, accurately weighed, in a pyridine (6 cc.) and acetic anhydride (2 cc.) mixture (3:1) and heat under a micro reflux condenser for twenty-four hours at 95 C. Transfer the solution to a 250 cc. flask containing 100 cc. of ice-cold water and titrate with 0.1 normal sodium hydroxide: the acetic acid value is not more than 129 nor less than 121, equivalent to three acetylated hydroxyl groups. [A blank determination must be made for pyridine acetic acid and anhydride] (J. Biol. Chem. 91: 655, 1931).

Dissolve approximately 0.04 Gm. of theelin in a pyridine (6 cc.) and acetic anhydride (2 cc.) mixture (3:1) and heat under a micro reflux condenser for twenty-one hours at 95 C. Let stand at 37 C. for another twenty-four hours. Add 10 cc. of 50 per cent alcohol and evaporate under vacuum to a thick syrup. Add very gradually about 1 cc. of alcohol and set aside for crystallization. Filter the crystals and redissolve in 3 cc. of 95 per cent alcohol. Evaporate the alcohol and dissolve the residue in 4 cc. of pyridine. After addition of 16 cc. of water a white flocculent precipitate occurs; recrystallize twice from 90 per cent alcohol; dry the crystals in vacuum at 80 C. over phosphorus pentoxide: the melting point of the triacetate is 126 C. ( $\pm 1$  degree).

Transfer approximately 2 mg. of estriol, accurately weighed, to a previously weighed micro platinum boat, add 0.05 cc. of sulfuric acid (1:5), incinerate in the muffle oven: no residue should remain. Micro carbon and hydrogen analysis, according to Pregl's method, gives a carbon content of not more than 75.2 per cent, nor less than 74.6 per cent, and a hydrogen content of not more than 8.7 per cent, nor less than 8.0 per cent.

Estriol crystals exhibit a reddish fluorescence under filtered ultraviolet light.

The dosage forms of brands of estriol are biologically assayed, the assay being under control of the St. Louis University committee.

**Theeol-P. D. & Co.**—A brand of estriol (theeol)—N. N. R.

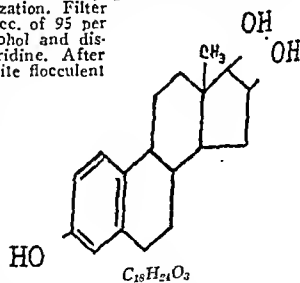
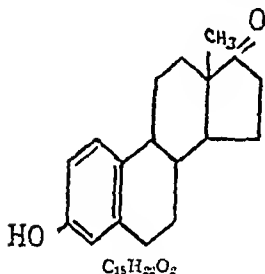
Manufactured by Parke, Davis & Company by license from St. Louis University under U. S. patents 1,967,350 and 1,967,351 (July 24, 1934; expire 1951). No U. S. trademark.

**Kapsels Theeol, 0.06 mg.:** Each kapsel (sealed gelatin capsule) contains 0.06 mg. theeol.

**Kapsels Theeol, 0.12 mg.:** Each kapsel (sealed gelatin capsule) contains 0.12 mg. theeol.

**SULFANILAMIDE** (See New and Nonofficial Remedies, 1938, p. 450).

**Sulfanilamide Tablets, 5 grains.**  
Prepared by Charles C. Haskell & Company, Inc., Richmond, Va. No U. S. patent or trademark.



# MEDICAL EDUCATION IN THE UNITED STATES AND CANADA

## THIRTY-EIGHTH ANNUAL PRESENTATION OF EDUCATIONAL DATA BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

The Council's preliminary report on extension courses for practicing physicians appears in this issue. Comment on the approved schools and statistical data for the academic year 1937-1938 are presented in the customary manner. Also included are revised lists of hospitals approved by the Council for internships and residencies in specialties and schools for occupational therapy, physical therapy and clinical laboratory technicians. The Essentials of an Acceptable Medical School and the Essentials of an Acceptable School of Occupational Therapy are reprinted as recently revised.

Statistics are presented covering seventy-seven medical schools<sup>1</sup> in the United States and ten in Canada, 729 hospitals approved for internships, 451 hospitals offering approved residencies in specialties, six schools for the study of occupational therapy, thirteen schools for physical therapy technicians and 137 schools for clinical laboratory technicians. The factual study of extension courses for practitioners covers twenty-three of the twenty-four states visited since October 1937.

These data are based on official reports. Acknowledgment is tendered the officers of the institutions mentioned and others for their ready cooperation in supplying the material submitted in this presentation as well as other data furnished throughout the year to the office of the Council and the members of its staff on inspection or visitation, enabling the Council to maintain its medical student and hospital registers efficiently and to carry on its activities as outlined by the House of Delegates of the American Medical Association.

### PRELIMINARY EDUCATION

Although many medical schools have additional requirements, the minimum standard of the Council since 1918 has been two years of college, including English, theoretical and practical courses in physics and biology and in general and organic chemistry, completed in institutions approved by accrediting associations acceptable to the Council. There are six such agencies, namely:

- Association of American Universities.
- North Central Association of Colleges and Secondary Schools.
- Middle States Association of Colleges and Secondary Schools.
- New England Association of Colleges and Secondary Schools.
- Southern Association of Colleges and Secondary Schools.
- Northwest Association of Secondary and Higher Schools.

For the guidance of admitting officers and prospective medical students, the Council publishes annually a compilation of colleges of arts and sciences approved by these bodies. For the year 1937-1938 there were 721 institutions included in the list as follows:

Association of American Universities.....	286
North Central .....	268
Southern .....	186
Middle States .....	132
Northwest .....	67
New England .....	47

Of those recognized by the Association of American Universities, all but twenty-one are approved also by

1. Includes three schools whose approval has been withdrawn and one school placed on probation. See footnotes to table 2, page 787.

their district agency. In the various groups this dual approval of 265 institutions is distributed as indicated below:

North Central .....	100
Middle States .....	62
Southern .....	55
New England .....	31
Northwest .....	17

These five regional associations of colleges referred to cover among them the entire United States with the exception of the far southwestern section of the United States. Institutions in this territory can secure only the approval of the national group—the Association of American Universities.

Prospective medical students do well to secure their premedical training in colleges that are included in this list. Otherwise they may find it difficult or impossible to enter the medical school of their choice; for, while there is no inviolable rule excluding applicants from

TABLE 1.—State Requirements of Preliminary Training

Two Years of College		
Alabama	Maine	Oregon
Arizona	Maryland	Pennsylvania
Arkansas	Massachusetts	Rhode Island
Colorado	Michigan	South Carolina
Delaware	Minnesota	South Dakota
District of Columbia	Mississippi	Tennessee
Florida	Montana	Texas
Georgia	Nevada	Utah
Idaho	New Hampshire	Vermont
Illinois	New Jersey	Virginia
Indiana	New Mexico	Washington
Iowa	New York	West Virginia
Kansas	North Carolina	Wisconsin
Kentucky	North Dakota	Wyoming
Louisiana	Oklahoma	
One Year of College		
California		Connecticut
High School Graduation or Its Equivalent		
Missouri	Nebraska	Ohio

unaccredited colleges, officials, in selecting from so large a number, give the preference to those whose preparation has been received in institutions which are known to conform to accepted standards. Of students from other institutions, they exact, both qualitatively and quantitatively, a higher performance. Since success in the medical curriculum demands more than average intelligence and industry, the college student who cannot place himself in the upper third of his class should seriously question the advisability of starting on a medical career. In 1931 the Association of American Medical Colleges passed a resolution recommending the use of aptitude tests as an additional guide in the selection of students. Accordingly, the majority of schools base their decisions in part on the medical aptitude scores and in part on college grades.

The Council does not specify the courses which should be taken in secondary schools or those which should be chosen as electives in colleges. To some extent the candidate should follow his own interest but should obtain a general education which is as broad as possible.

(Continued on page 790)



TABLE 2.—Statistics of Recognized Medical Schools in the United States and Canada

Marginal No.	Name and Location of School	1933-1939 Prerequisite by Years	Length of Course, Year	Students by Classes, Session 1937-1938						Graduates Since July 1, 1937	Session 1938-1939		Applications for Admission to the 1st Year Will Be Re- ceived Until	Executive Officer	Marginal No.
				1st Year	2d Year	3d Year	4th Year	5th Year	Woman		Recess 1938	Ends 1939			
1	University of Alabama School of Medicine, University (Tuscaloosa)...	3	2	49	42	...	...	...	01	...	Sept. 15	May 30	Jan.	Stuart Graves, M.D., Dean.	1
2	*University of Arkansas School of Medicine, Little Rock.	2	4	85	62	71	80	...	203	...	Sept. 23	June 6	Sept.	Frank Vinsonheller, M.D., Dean.	2
3	University of California Medical School, Berkeley-San Francisco.	3	5	64	58	62	63	61	247	...	Aug. 22	May 20	April	Langley Porter, M.D., Dean.	3
4	College of Medical Evangelists, Loma Linda-Los Angeles.	2	5	93	83	93	111	111	384	...	Sept. 5	June 11	May	E. H. Risley, M.D., Dean, Loma Linda; W. E. Macpherson, M.D., Assoc. Dean, Los Angeles	4
5	University of Southern California School of Medicine, Los Angeles.	3	5	54	48	45	43	44	190	...	Sept. 19	June 10	March	Paul S. McKibben, Ph.D., Dean.	5
6	Stanford University School of Medicine, San Francisco.	3	5	62	60	57	53	63	237	...	Sept. 27	June 14	March	Loren Roscoe Chandler, M.D., Dean.	6
7	University of Colorado School of Medicine, Denver.	3	4	59	49	50	49	...	207	...	Sept. 26	June 12	April	Maurice H. Rees, M.D., Dean.	7
8	Yale University School of Medicine, New Haven.	3	4	34	34	45	37	...	190	...	Sept. 26	June 14	March	Stanhope Bayne-Jones, M.D., Dean.	8
9	Georgetown University School of Medicine, Washington.	3	4	50	80	73	107	...	300	...	Sept. 19	June 12	March	David V. McCauley, S.J., Ph.D., Dean.	9
10	George Washington University School of Medicine, Washington.	3	4	69	55	57	63	...	249	...	Sept. 28	June 14	Sept.	Earl B. McKinley, M.D., Dean.	10
11	Howard University College of Medicine, Washington.	3	4	36	37	35	23	...	131	...	Sept. 26	June 9	Sept.	Numa P. G. Adams, M.D., Dean.	11
12	Emory University School of Medicine, Atlanta.	3	4	63	51	46	60	...	220	...	Sept. 26	June 5	June	Russell H. Oppenheimer, M.D., Dean.	12
13	University of Georgia School of Medicine, Augusta.	3	4	49	38	30	34	...	131	...	Sept. 26	June 12	June	G. Lombard Kelly, M.D., Dean.	13
14	Loyola University School of Medicine, Chicago.	3	5	71	102	120	110	117	403	...	Sept. 6	June 15	Sept.	Louis D. Moorhead, M.D., Dean.	14
15	Northwestern University Medical School, Chicago.	3	5	129	121	155	133	133	533	...	Sept. 27	June 10	April	Irring S. Cutter, M.D., Dean.	15
16	University of Chicago, Rush Medical College.	3	4	...	...	...	...	...	362	...	Oct. 3	June 13	April	Emmet B. Bay, M.D., Associate Dean.	16
17	University of Chicago, The School of Medicine of the Division of Biological Sciences.	3	4	...	153	165	157	166	287	...	Oct. 3	June 14	Feb.	B. C. H. Harvey, M.D., Dean of Students.	17
18	University of Illinois College of Medicine, Chicago.	3	5	154	111	103	94	...	634	...	Sept. 29	June 9	July	David J. Davis, M.D., Dean.	18
19	Indiana University School of Medicine, Bloomington-Indianapolis.	3	4	121	111	103	94	...	429	...	Sept. 17	June 5	June	Burton D. Myers, M.D., Dean, Bloomington; Willis D. Gatch, M.D., Dean, Indianapolis	19
20	Iowa State University of Iowa College of Medicine, Iowa City.	3	4	104	93	88	84	...	369	...	Sept. 26	June 5	July	Ewen Murchison MacEwen, M.D., Dean.	20
21	University of Kansas School of Medicine, Lawrence-Kansas City.	2	4	77	75	70	67	...	289	...	Sept. 22	June 12	June	H. R. Wadi, M.D., Dean.	21
22	University of Louisville School of Medicine, Louisville.	2	4	87	76	87	92	...	342	...	Sept. 15	June 3	April	John Walker Moore, M.D., Dean.	22
23	Louisiana State University Medical Center, New Orleans.	3	5	101	81	64	61	56	307	...	Sept. 5	May 27	March	Rigney D'Amoy, M.D., Dean.	23
24	Tulane University of Louisiana School of Medicine, New Orleans.	2	4	136	105	109	117	...	465	...	Sept. 23	June 7	March	Charles C. Bass, M.D., Dean.	24
25	Johns Hopkins University School of Medicine, Baltimore.	Degree	4	63	61	74	75	...	281	...	Sept. 27	June 6	June	Alan M. Chesney, M.D., Dean.	25
26	University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore.	3	4	91	80	93	100	...	373	...	Sept. 22	June 3	June	J. M. H. Rowland, M.D., Dean.	26
27	Boston University School of Medicine, Boston.	3	4	50	53	49	47	...	190	...	Sept. 22	June 12	May	Alexander S. Bege, M.D., Dean.	27
28	Harvard University Medical School, Boston.	2	4	125	127	133	135	...	530	...	Sept. 26	June 22	March	Charles Sidney Burwell, M.D., Dean.	28
29	Tufts College Medical School, Boston.	Degree	4	100	96	110	113	...	410	...	Sept. 21	June 19	April	A. Warren Stearns, M.D., Dean.	29
30	University of Michigan Medical School, Ann Arbor.	3	4	137	134	102	108	...	481	...	Sept. 26	June 17	March	A. C. Furstenberg, M.D., Dean.	30
31	Wayne University College of Medicine, Detroit.	3 & Degree	5	63	62	60	75	78	260	...	Sept. 19	June 17	May	Raymond B. Allen, M.D., Dean.	31
32	University of Minnesota Medical School, Minneapolis.	2	5	118	127	123	96	98	469	...	Sept. 26	June 17	July	Harold S. Diehl, M.D., Dean.	32
33	University of Mississippi School of Medicine, University.	3	2	29	14	...	...	...	34	...	Sept. 19	June 5	Sept.	B. S. Guyton, M.D., Dean.	33
34	University of Missouri School of Medicine, Columbia.	3	2	44	35	...	...	...	79	...	Sept. 12	June 6	June	Dudley S. Conley, M.D., Dean.	34
35	St. Louis University School of Medicine, St. Louis.	3	4	110	113	116	113	...	401	...	Sept. 20	June 1	Sept.	Alphonse M. Schmitt, S.J., Ph.D., Dean.	35
36	Washington University School of Medicine, St. Louis.	4	4	82	75	94	87	...	243	...	Sept. 22	June 4	Sept.	Philip A. Shaffer, Ph.D., Dean.	36
37	Creighton University School of Medicine, Omaha.	3	4	75	60	57	70	...	202	...	Sept. 20	June 1	June	Bryan M. Riley, M.D., Dean.	37
38	University of Nebraska College of Medicine, Omaha.	3	4	93	81	71	74	...	319	...	Sept. 19	June 6	June	C. W. M. Foyt, M.D., Dean.	38
39	Dartmouth Medical School, Hanover.	3	2	20	13	...	...	...	38	...	Sept. 22	June 16	Feb.	John P. Bowler, M.D., Dean.	39

## NEW YORK

10 Albany Medical College, Albany.....	Degree	4	35	27	23	25	110	25	Sept. 26	June 12	July	R. S. Cunningham, M.D., Dean.....	40
11 Long Island College of Medicine, Brooklyn.....	2 1/2	4	96	85	91	89	361	88	Sept. 26	June 10	Sept.	Jean A. Curran, M.D., Dean.....	41
12 University of Buffalo School of Medicine, Buffalo.....	2	4	70	61	70	57	253	58	Oct. 3	June 10	Sept.	Edward W. Koch, M.D., Dean.....	42
13 Cornell University Medical College, White Plains.....	3&Degree	4	77	70	63	67	283	66	Sept. 21	June 7	.....	William S. Ladd, M.D., Dean.....	43
14 Columbia University College of Physicians and Surgeons, New York.....	3	4	113	104	97	91	405	90	Oct. 22	June 6	Nov.	William C. Burdette, M.D., Dean.....	44
15 New York Medical College of Flower Hospital, New York.....	Degree	4	87	104	97	91	208	57	Sept. 19	June 6	Aug.	Claude C. Ruppel, M.D., Dean.....	45
16 New York Medical College of Roosevelt Hospital, New York.....	3&Degree	4	133	120	121	117	496	124	Sept. 14	June 7	Jan.	Currier McQuinn, M.D., Dean.....	46
17 University of Rochester School of Medicine, Rochester.....	3	4	49	46	43	39	177	39	Sept. 19	June 17	March	George Royt Whipple, M.D., Dean.....	47
18 Syracuse University College of Medicine, Syracuse.....	3	4	49	44	47	36	176	36	Sept. 22	June 5	.....	H. G. Weiskotten, M.D., Dean.....	48
19 University of North Carolina School of Medicine, Chapel Hill.....	3	2	36	29	.....	.....	65	...	Sept. 15	June 6	Sept.	William deB. MacNider, M.D., Dean.....	49
20 Duke University School of Medicine, Durham.....	2 1/2	4	71	63	60	53	232	47	Sept. 29	June 5	.....	Wilbur C. Drivson, M.D., Dean.....	50
21 Wake Forest College School of Medical Sciences, Wake Forest.....	3	2	22	19	.....	.....	41	...	Sept. 14	May 30	June	C. C. Carpenter, M.D., Dean.....	51
22 **University of North Dakota School of Medicine, Grand Forks.....	3	2	24	24	.....	.....	48	...	Sept. 19	June 6	Sept.	H. E. French, M.D., Dean.....	52
23 University of Cincinnati College of Medicine, Cincinnati.....	3	5	78	73	68	75	294	72	Sept. 23	June 9	April	Alfred Friedlander, M.D., Dean.....	53
24 Western Reserve University School of Medicine, Cleveland.....	3&Degree	4	77	65	64	64	270	63	Sept. 22	June 14	Sept.	Torald Solmann, M.D., Dean.....	54
25 Ohio State University College of Medicine, Columbus.....	3	4	80	78	81	92	331	92	Oct. 4	June 12	June	J. H. J. Upham, M.D., Dean.....	55
26 University of Oklahoma School of Medicine, Oklahoma City.....	2	4	64	55	51	53	223	52	Sept. 19	June 5	Sept.	Robert U. Patterson, M.D., Dean.....	56
27 University of Oregon Medical School, Portland.....	3	4	70	61	66	56	233	55	Oct. 3	June 3	July	Richard B. Dillehunt, M.D., Dean.....	57
28 Hahnemann Medical College and Hospital of Philadelphia.....	2	4	149	131	139	159	545	129	Oct. 3	June 15	Oct.	William A. Pearson, M.D., Dean.....	58
29 Jefferson Medical College of Philadelphia.....	Degree	4	125	116	123	134	493	134	Sept. 20	June 2	Sept.	Henry K. Mohler, M.D., Dean.....	59
30 Temple University School of Medicine, Philadelphia.....	3	4	111	98	120	114	441	113	Sept. 21	June 15	Sept.	William N. Parkison, M.D., Dean.....	60
31 University of Pennsylvania School of Medicine, Philadelphia.....	3	4	120	113	127	140	500	139	Sept. 26	June 14	March	William Pepper, M.D., Dean.....	61
32 Woman's Medical College of Pennsylvania, Philadelphia.....	3	4	31	26	21	28	106	25	Sept. 21	June 14	Aug.	Martha Tracy, M.D., Dean.....	62
33 University of Pittsburgh School of Medicine, Pittsburgh.....	2	4	64	48	55	63	230	61	Sept. 19	June 14	March	W. S. McEllroy, M.D., Acting Dean.....	63
34 Medical College of the State of South Carolina, Charleston.....	3	4	42	30	44	42	101	42	Sept. 22	June 1	May	Robert Wilson, M.D., Dean.....	64
35 **University of South Dakota School of Medical Sciences, Vermillion.....	3	2	17	14	.....	.....	31	...	Sept. 14	June 5	July	Joseph C. Ohlmacher, M.D., Dean.....	65
36 University of Tennessee College of Medicine, Memphis.....	2	4	133	99	90	106	437	105	July 6 <sup>†</sup>	June 10	.....	O. W. Hyman, Ph.D., Dean.....	66
37 Vanderbilt University School of Medicine, Nashville.....	3&Degree	4	73	57	45	35	296	35	Oct. 1	June 2	Sept.	Edward L. Turner, M.D., Dean.....	67
38 Baylor University College of Medicine, Dallas.....	3	4	83	75	71	73	302	73	Oct. 1	June 5	July	W. H. Moursund, M.D., Dean.....	68
39 University of Texas School of Medicine, Galveston.....	3	4	103	96	91	81	371	89	Oct. 1	May 31	June	W. S. Carter, M.D., Dean.....	69
40 University of Utah School of Medicine, Salt Lake City.....	3	2	30	23	.....	.....	58	...	Sept. 26	June 2	Feb.	L. L. Dalnes, M.D., Dean.....	70
41 University of Vermont College of Medicine, Burlington.....	2	4	22	35	38	39	144	38	Sept. 10	June 12	July	E. H. Battles, M.D., Chairman, Committee of Administration.....	71
42 University of Virginia Department of Medicine, Charlottesville.....	2	4	71	63	57	56	247	56	Sept. 15	June 12	.....	J. Carroll Flippin, M.D., Dean.....	72
43 Medical College of Virginia, Richmond.....	3	4	82	65	72	76	295	76	Sept. 6	June 6	.....	Lee E. Sutton, Jr., M.D., Dean.....	73
44 West Virginia University School of Medicine, Morgantown.....	3	2	27	14	.....	.....	41	...	Sept. 13	June 3	Sept.	Edward J. Van Lere, M.D., Dean.....	74
45 University of Wisconsin Medical School, Madison.....	3	4	94	99	52	53	298	52	Sept. 21	June 19	March	William S. Middleton, M.D., Dean.....	75
46 Marquette University School of Medicine, Milwaukee.....	3	5	59	84	70	71	324	65	Sept. 26	June 14	.....	Eben J. Carey, M.D., Dean.....	76
47 University of Alberta Faculty of Medicine, Edmonton, Alta.....	1	6	30	45	41	38	305	31	Sept. 27	April 30	Sept.	Allan G. Rankin, M.D., Dean.....	77
48 University of Manitoba Faculty of Medicine, Halifax, N. S.....	2	5	59	56	50	57	504	49	Sept. 16	May 18	April	A. T. Mather, M.D., Dean.....	78
49 Dalhousie University Faculty of Medicine, Halifax, N. S.....	2	5	50	52	39	37	331	178	Sept. 13	May 16	.....	H. G. Grant, M.D., Dean.....	79
50 Queen's University Faculty of Medicine, Kingston, Ont.....	1	6	44	48	44	46	453	252	May 24	Aug.	.....	Frederick Etherington, M.D., Dean.....	80
51 University of Western Ontario Medical School, London, Ont.....	1	6	44	40	32	30	323	212	Sept. 19	May 13	Sept.	F. J. H. Campbell, M.D., Dean.....	81
52 University of Toronto Faculty of Medicine, Toronto, Ont.....	1	6	143	137	144	138	1363	811	Sept. 27	May 13	Sept.	W. E. Galle, M.D., Dean.....	82
53 McGill University Faculty of Medicine, Montreal, Que.....	3	5	105	94	80	101	97	477	97	June 1	March	A. Grant Fleming, M.D., Dean.....	83
54 Laval University Faculty of Medicine, Quebec, Que.....	1	5	46	56	50	26	401	187	Sept. 15	June 15	Sept.	Albert Le Sage, M.D., Dean.....	84
55 University of Saskatchewan School of Medical Sciences, Saskatoon, Sask.....	2	5	93	67	62	42	307	41	Sept. 20	May 31	Aug.	P. C. Dagnan, M.D., Dean.....	85
56 .....	2	2	21	23	.....	.....	47	...	Sept. 26	May 12	Aug.	W. S. Lindsay, M.B., Dean.....	86
57 .....	2	2	21	23	.....	.....	47	...	Sept. 26	May 12	Aug.	W. S. Lindsay, M.B., Dean.....	87

\* Approval withdrawn June 11, 1933, without prejudice to the students then enrolled. This protection was also extended to the entering class of 1933-1934.

\*\* Approval withdrawn Oct. 11, 1933, without prejudice to the students then enrolled. On June 6, 1937, protection was extended to students who may be enrolled in the first year class in 1937-1938.

On February 13, 1933, this protection was extended to the entering class of 1933-1934.

† Enrollment not on above table by classes for the two medical schools of the University of Chicago.

‡ Fifth year (internship) enrollment not included in the total column.

§ Sixth year enrollment: Alberta, 31; Queen's, 52; Western Ontario, 34; Toronto, 113.

#Students admitted at different times of the year: Stanford, second year January 3; Northwestern, beginning of May quarter; Kansas, February 6, 1933; Minnesota, January 5; Tennessee, Sept. 22. Dec. 30, 1933 and March 20, 1934.



### Place of Students

[illegible]

*(Continued from page 785)*

While the minimum requirement is two years, three years or more in college is recommended. For the session 1938-1939, fifty-eight of the seventy-seven medical schools in the United States have adopted preliminary requirements in excess of the minimum; i. e., five require a degree, forty-five require three years, one requires four years, five schools will admit students with three years of college work if the baccalaureate degree is conferred in absentia at the end of the first year in medicine, and two schools have a requirement equivalent to two and one-half years. Only nineteen schools have a stated two year requirement. Actually, however, most of their students enter with a preliminary training far in excess of the prescribed minimum. The general trend toward a requirement of three or more years of college work seems to be due to two factors; first, a desire for more thorough grounding in all the branches of chemistry and, second, a desire for a greater familiarity with nonscience subjects, such as literature, history or economics, than can be secured in two years of college.

The medical schools in Canada vary in their preliminary requirement. One requires a degree for admission to a five year course; four have a six year medical course preceded by senior matriculation which is equivalent to the work of the first year in a college of arts; one school requires one year for entrance to a five year medical course; three require two years, and one has a three year prerequisite.

A table appears later in this study recording the number of graduates of 1938 holding baccalaureate degrees (table 13). Similarly, mention is made of those who have received the degree of B.S. in medicine.

While the two year college prerequisite has been exacted by the Council for twenty years, there are still five states which have not revised or amended their statutes to conform, although these states rarely license other than graduates of approved schools. The pre-medical training required in each state is shown in table 1.

#### LENGTH OF MEDICAL COURSE

The medical course in the United States in general covers four academic years of approximately thirty-two weeks each. Fifty schools offer such a course. A few schools, namely the Universities of Northwestern, Minnesota, Duke and Tennessee, operate to some extent on the quarter system permitting a student by utilizing the summer months to decrease the length of time necessary to obtain his degree. A considerable number of the students of these schools do not elect to study during the summer months. The medical schools of the University of Chicago are operated on a plan of individual promotion permitting a student to advance as rapidly as he desires but the great majority complete the course in twelve quarters.

Fifty-five schools require a four year course, while twelve require four years of systematic instruction followed by a fifth year spent as an intern or in research work. Ten schools offer only a two year course.

Five of the medical schools of Canada offer a five year course, four have a six year course and one offers courses in the medical sciences only which are covered in two years. Four Canadian schools require an internship for graduation. These data are shown in table 2.

#### ESSENTIALS OF AN ACCEPTABLE MEDICAL SCHOOL

The Essentials of an Acceptable Medical School were recently revised and ratified by the House of Delegates at its 1938 session. They are published in full on pages 810 to 812. The principal change is the recommendation that medical schools not already doing so select their beginning students from among those having three years of college work rather than the minimum requirement of two years. This recommendation was based on a study made in 1937 showing that more than half of the students (3,181) admitted for the session 1936-1937 had a college degree before beginning medicine and 32 per cent had more than four years, leaving only 12 per cent with the minimum of two years. Furthermore, seven schools have raised their requirement for the session 1938-1939 from two to three years, namely Loyola, Iowa, St. Louis, Syracuse, South Dakota, Texas and Marquette. Fifty-eight of the seventy-seven medical schools in the United States now have a prerequisite of more than two years of college. Of the remaining nineteen, Minnesota and Oklahoma have announced that beginning in 1939-1940 three years will be in force.

#### MEDICAL CURRICULUM

The standard curriculum recognized by the Council on Medical Education and Hospitals and contained in its Essentials of an Acceptable Medical School consists of from 3,600 to 4,400 hours, distributed as from 900 to 1,100 hours a year and grouped under nine headings; namely, anatomy (including embryology and histology); physiology; biochemistry; pathology, bacteriology and immunology; pharmacology; hygiene and sanitation; general medicine; general surgery, and obstetrics and gynecology. A certain percentage of hours of the whole number of hours in the courses is required in each of these groups.

#### DEVELOPMENTS IN MEDICAL EDUCATION

Reports from a large number of medical schools indicate that, as a result of the Council's survey, substantial improvements have been and are being made in faculty personnel, student selection, clinical facilities, buildings and equipment. Nineteen schools have reported budget increases which average \$43,300. During the last four years the following institutions have greatly improved their physical plant: Alabama, Medical Evangelists, Georgia, Illinois, Indiana, Maryland, New York Medical College, Syracuse, North Carolina, Ohio State, Pittsburgh, Vanderbilt and Medical College of Virginia. Several other schools have plans outlined for additions to their physical plant.

#### MEDICAL SCHOOL SURVEY

The Council is now preparing a final report of the survey which will present a fairly comprehensive review of medical education based on the extensive data collected during the past three or four years. Such a commentary will doubtless be a valuable source of information to all who may be interested in medical teaching and will constitute a permanent record of the Association's most important contribution in the field of professional education. Confidential reports in graphic form have been sent to the schools visited. From these pattern maps, officers of an institution may learn where their school stands in relation to other schools with



respect to about 100 items used as a basis for comparison. The survey has revealed certain weaknesses in the organization and administration of a number of schools. Where unsatisfactory conditions have been found a warning has been given that improvement must be made within a limited time if the Council's approval is to be continued. The stimulating effect of such counsel is noticeable. Many of the schools will be revisited during the coming year in order to evaluate progress.

#### SCHOOLS OF THE BASIC MEDICAL SCIENCES

In the United States there are ten schools which offer only the first two years of the medical curriculum. For the most part these schools are located in smaller communities where clinical material is so scarce that satisfactory teaching of clinical medicine would be utterly impossible. In many instances, facilities do not exist for the satisfactory teaching of such subjects as physical diagnosis and gross pathology, which involve the use of clinical material. The same is true of the introductory courses in medicine and surgery, which commonly form a part of the second year schedule. Prolonged study of the problem led to the adoption in February 1937 of the following policy:

Following the recent survey of the medical schools it was decided that, effective July 1, 1939, the Council will publish a list of schools which teach acceptably gross and microscopic anatomy, biochemistry, physiology, pharmacology, bacteriology and pathology, even though they do not offer a full course leading to a medical degree.

The acceptance of courses involving the use of clinical material shall be left to the discretion of the faculties which admit to advanced standing students transferring from approved schools of the basic medical sciences.

Surveys of the clinical courses and facilities will be made by the Council and reported to the individual medical schools on request.

#### STATISTICS OF MEDICAL SCHOOLS

The medical schools approved by the Council on Medical Education and Hospitals of the American Medical Association during 1937-1938 are listed in table 2, pages 786 and 787 and contain figures regarding the premedical requirement for the session 1938-1939, the length of the medical course by years, enrolment by classes for the session 1937-1938, including fifth year students interning or engaged in research, the number of graduates since July 1, 1937, dates of the beginning and ending of the forthcoming session and the month until which applications for admission to the freshman class are received. Changes in the classification that have taken place since the publication of the educational statistics in 1937<sup>2</sup> can be noted in the footnotes at the bottom of the table and refer to those schools which are marked by asterisks preceding the name. Also contained in the footnotes are references to the fifth and sixth year enrolments and those schools which admit students at varying times during the year. The two medical schools of the University of Chicago do not report their students by classes and in this tabulation, therefore, only the total enrolment is given.

The data presented in this table constitute the basis also for several of the subsequent tabulations and beginning on page 815 are given historical information and essential facts concerning the schools arranged by states.

Seventy-seven institutions in the United States and ten in Canada are listed. All but four of these schools

at the present time enjoy the approval of the Council. In eighty-five schools, 6,429 freshmen students were enrolled, 5,852 sophomores, 5,528 juniors, 5,561 seniors, 392 fifth year and 230 sixth year students during the session just ended. In the two medical schools of the University of Chicago 549 students were enrolled, making a total of 24,541 in the eighty-seven schools listed. There were in the United States 5,791 freshmen, 5,225 sophomores, 4,986 juniors, 5,036 seniors and the 549 students of the University of Chicago, a total of 21,587. The total students registered by classes in the United States was 21,038. The enrolment in the ten two year schools in the United States was 526, of which 289 were freshmen and 237 sophomores. The enrolment in the ten Canadian schools was first year 638, second year 627, third year 542, fourth year 525, fifth year 392 and sixth year 230, a total of 2,954. The 24,541 medical students enrolled do not include 1,132 fifth year students in the United States interning or engaged in research and 123 in Canada interning as a requirement for the degree of Doctor of Medicine.

Since July 1, 1937, 5,691 received M.D. degrees, 5,194 from schools in the United States and 497 from Canadian institutions.

In addition there were 125 part-time, 376 special and 722 graduate students studying in medical schools.

Eleven medical schools had an enrolment of less than 100 students. None of the schools comprising this figure give the complete medical course. Fourteen schools matriculated fewer than 200 but more than 100, twenty-nine less than 300, fourteen fewer than 400, thirteen fewer than 500, and four less than 600. Two schools matriculated more than 600. The smallest enrolment (thirty-one) was at the University of South Dakota School of Medical Sciences, where seventeen freshmen and fourteen sophomores matriculated. This school does not offer the complete medical course. The greatest number (811) were enrolled in the University of Toronto Faculty of Medicine, which has a six year course including premedical subjects. The corresponding high figure among schools in the United States was 634 at the University of Illinois College of Medicine. The lowest enrolment among four year medical colleges in the United States was 106 at the Woman's Medical College of Pennsylvania. Among coeducational four year schools, Albany Medical College enrolled the smallest number of students, 110. Howard University College of Medicine graduated twenty-two students, the lowest number. The two schools that enrolled the fewest students had twenty-five graduates respectively. The school graduating the greatest number was Rush Medical College, which awarded 168 diplomas. The majority of schools will begin the session 1938-1939 about the middle of September and end early in June.

Of seventy-four schools that replied to the inquiry regarding the month until which applications for admission to the first year class will be received, two replied January, three February, twelve March, eight April, four May, nine June, eight July, five August, twenty-one September and one October and November.

The name of the dean or administrative officer of each institution is also given in table 1.

#### BIRTH PLACE OF STUDENTS

In table 3, pages 788 and 789, the birth state of students in attendance in medical schools during 1937-1938 is shown by schools. The state furnishing the greatest number of students, according to state of birth,

2. J. A. M. A. 109:660 (Aug. 28) 1937.

was New York with 3,063, followed by Pennsylvania with 1,926, Illinois with 1,488 and Ohio with 1,138.

From the twelve states in which no medical schools are located there were enrolled as students the following:

	Enrolled	Number of Schools
Arizona .....	41	22
Delaware .....	41	19
Florida .....	132	28
Idaho .....	102	34
Maine .....	105	36
Montana .....	105	35
Nevada .....	22	13
New Jersey .....	896	65
New Mexico .....	30	21
Rhode Island .....	118	35
Washington .....	274	46
Wyoming .....	25	15
Total .....	1,801	

There were 181 born in the United States territories and possessions studying in forty-four schools in the United States and three in Canada. In addition, 2,564

TABLE 4.—Students Classified by Birth Place

State	Schools	Attending School in State of Birth	Birth Place Elsewhere
Alabama .....	1	53	38
Alaska .....	1	172	126
Arizona .....	4	393	665
Arkansas .....	1	105	99
California .....	1	43	147
Colorado .....	3	91	639
Connecticut .....	2	272	99
Georgia .....	5	1,107	1,035
Illinois .....	1	396	33
Indiana .....	1	292	77
Iowa .....	1	185	104
Kansas .....	1	152	150
Kentucky .....	2	293	452
Louisiana .....	2	215	439
Maine .....	3	320	618
Michigan .....	2	376	365
Minnesota .....	1	407	62
Mississippi .....	1	32	2
Missouri .....	3	255	633
Nebraska .....	2	287	294
New Hampshire .....	1	5	33
New York .....	9	1,704	830
North Carolina .....	3	143	215
North Dakota .....	1	38	10
Ohio .....	3	627	268
Oklahoma .....	1	142	81
Oregon .....	1	103	150
Pennsylvania .....	6	1,393	928
Rhode Island .....	1	149	15
South Carolina .....	1	14	17
South Dakota .....	3	259	583
Texas .....	2	541	132
Utah .....	1	40	18
Vermont .....	1	77	67
Virginia .....	2	260	282
West Virginia .....	1	97	14
Wisconsin .....	2	351	271
Wyoming .....	10	2,435	519
Totals .....	87	13,961	10,580

students of Canadian birth were also studying medicine, 129 of whom were matriculated in forty-four schools in the United States and 2,435 in the ten Canadian medical schools. Eighteen students of Canadian birth were registered at the College of Medical Evangelists and thirteen at Wayne University College of Medicine. Students born in New York were enrolled in all but seven schools. Pennsylvania was represented in all but sixteen schools. Residents of New Jersey, which has no medical school, were admitted in all but twenty-two schools.

In table 4 the classification of students is extended further by birth place, indicating that 13,961 are studying in the state of their birth and 10,580 elsewhere. This is particularly significant in Illinois, where, of the 2,144 students in five schools, 1,035 were born outside the state. More than 900 born elsewhere are studying in Pennsylvania, while of 2,534 studying in New York,

830 were born elsewhere. Altogether, 43.3 per cent are studying in schools located in other than their birth state. Eliminating the 1,801 born in states having no medical school, there are still 8,779 of the total number of students, 24,541, studying outside their birth state.

A perusal of table 4 will show many instances wherein the number studying elsewhere far exceeds the number attending school in the state of birth. It also shows some states in which the contrary is the case, notably Arkansas, Georgia, Indiana, Iowa, Kansas, Minnesota, Ohio, South Carolina and Texas.

One may not conclude that all of those attending schools outside the state in which they were born are nonresidents, but since requirements for "residence" differ widely among the states comparable figures based on residence are not obtainable.

There were 569 students of foreign nativity pursuing courses in sixty-six institutions in the United States. Altogether, seventy-seven countries were represented. The greatest number (sixty-seven) came from Russia; forty-nine were born in China, forty in Germany and Italy respectively, thirty-six in Poland, twenty-five in England, twenty-one in the British West Indies, nineteen in Mexico, eighteen in Cuba, seventeen in Japan, fifteen in India, thirteen in Austria, twelve in Greece and eleven in Hungary. From all other countries there were less than nine. Forty-two students were admitted to the College of Medical Evangelists, which educates mainly medical missionaries. These students represented twenty-one countries. Thirty-five students were admitted to the University of Illinois College of Medicine from fifteen countries, and twenty-three from seventeen countries went to Harvard and the same number from fifteen countries to the Hahnemann Medical College. It may be presumed that many of these are now citizens of the United States.

#### RESIDENT AND NONRESIDENT STUDENTS

Table 5 gives for each medical school the number of resident and nonresident students according to the individual school's definition of the word "resident." This table is being reproduced for the second time. Among state universities, as well as other schools, there is a variation in the definition of the term. In some universities this is determined by the legal or permanent residence of the student, parents or guardian only, while in some schools continuous residence for six months one, two or three years just prior to the student's application for enrolment is also required. Others require the student to be a voter; parents' home in the state established prior to beginning of premedical work; the student is a taxpayer or a dependent of a taxpayer, regardless of whether he resides in the state; self-supporting student, and each case determined by attorney after consideration of birth, citizenship, residence of parents, and so on. Of these methods the most common is the determination of residence by ascertaining whether the student, parents or guardian has been a bona fide resident for a period not less than six months. This requirement is in force in sixteen universities. In most schools also a student coming into the state for educational purposes only and establishing residence would not be considered a resident. Among other than state universities the term "resident" is defined mostly by the home address of the student or the legal residence of the parents or guardian. Two such schools did not reply to our inquiry, while in one school a student is considered a resident if he lives in the state.

On the basis of these factors, in the seventy-seven approved medical schools in the United States there were 13,518 students reported as residents and 8,069 as nonresidents, a total of 21,587 in the United States. The state university enrolling the greatest number of

TABLE 5.—*Resident and Nonresident Students*

School	Resident Students	Nonresident Students	Totals
University of Alabama.....	60	31	91
University of Arkansas.....	228	70	298
University of California.....	246	1	247
College of Medical Evangelists.....	89	205	294
University of Southern California.....	179	11	190
Stanford University.....	195	42	237
University of Colorado.....	185	22	207
Yale University.....	56	134	190
Georgetown University.....	21	329	350
George Washington University.....	57	192	249
Howard University.....	13	118	131
Emory University.....	142	78	220
University of Georgia.....	148	3	151
Loyola University.....	255	148	403
Northwestern University.....	195	363	558
Rush Medical College.....	70	192	262
Division of Biological Sciences.....	123	164	287
University of Illinois.....	633	1	634
Indiana University.....	396	33	429
State University of Iowa.....	361	8	369
University of Kansas.....	261	28	289
University of Louisville.....	178	164	342
Louisiana State University.....	182	125	307
Tulane University of Louisiana.....	116	352	468
Johns Hopkins University.....	55	226	281
University of Maryland.....	218	155	373
Boston University.....	128	71	199
Harvard University.....	117	403	520
Tufts College.....	278	141	419
University of Michigan.....	364	117	481
Wayne University.....	233	7	240
University of Minnesota.....	407	62	469
University of Mississippi.....	34	..	79
University of Missouri.....	79	..	79
St. Louis University.....	88	373	461
Washington University.....	132	216	348
Creghton University.....	51	211	262
University of Nebraska.....	302	17	319
Dartmouth Medical School.....	5	33	38
Albany Medical College.....	79	31	110
Long Island College of Medicine.....	281	80	361
University of Buffalo.....	232	26	258
Columbia University.....	210	195	405
Cornell University.....	170	113	283
New York Medical College.....	190	78	268
New York University.....	404	92	496
University of Rochester.....	101	76	177
Syracuse University.....	137	39	176
University of North Carolina.....	53	12	65
Duke University.....	68	184	252
Wake Forest College.....	35	6	41
University of North Dakota.....	46	2	48
University of .....	218	76	294
Western Res.....	204	66	270
Ohio State.....	331	..	331
University of .....	217	6	223
University of .....	165	88	253
Hahnemann Medical College.....	298	250	548
Jefferson Medical College.....	287	211	498
Temple University.....	310	131	441
University of Pennsylvania.....	321	179	500
Woman's Medical College.....	41	65	106
University of .....	230	..	230
Medical College.....	149	15	164
University of .....	19	12	31
University of Tennessee.....	222	215	437
Meharry Medical College.....	9	197	206
Vanderbilt University.....	64	135	199
Baylor University.....	251	51	302
University of Texas.....	371	..	371
University of Utah.....	49	9	58
University of Vermont.....	96	48	144
University of Virginia.....	170	77	247
Medical College of Virginia.....	116	179	295
West Virginia University.....	37	4	41
University of Wisconsin.....	276	22	298
Marquette University.....	161	163	324
Totals.....	13,518	8,069	21,587
Totals for 1936-1937.....	14,026	8,009	22,035

Among other than state universities it is of interest to note the resident and nonresident enrolment. Many of the schools draw their enrolment from residents of the state. This is particularly true at Southern California, Stanford, Emory, Wayne, Long Island, Buffalo, New York Medical College, New York University, Syracuse, Cincinnati, Western Reserve, Pittsburgh and Baylor.

There is a similarity between the figures in this table and those of the preceding one classifying students by birth place. Excluding the Canadian registration given in table 4, there were 11,526 students attending school in the state of their birth and 10,061 elsewhere, as compared with 13,518 whose legal residence is in the state in which they are pursuing their medical courses and 8,069 classified as nonresidents.

TABLE 6.—*Schools, Students and Graduates by States\**

State	Schools	Students	Graduates
Alabama.....	1	91	..
..	1	298	80
..	4	1,038	271
..	1	207	49
..	1	190	40
Distriet of Columbia.....	3	730	197
Georgia.....	2	371	94
Illinois.....	5	2,144	626
Indiana.....	1	429	87
Iowa.....	1	369	83
Kansas.....	1	289	67
Kentucky.....	1	342	93
Louisiana.....	2	775	163
Maryland.....	2	654	178
Massachusetts.....	3	1,138	287
Michigan.....	2	741	180
Minnesota.....	1	469	117
Mississippi.....	1	84	..
Missouri.....	3	888	199
Nebraska.....	2	551	143
New Hampshire.....	1	58	..
New York.....	9	2,334	383
North Carolina.....	3	338	47
North Dakota.....	1	48	..
Ohio.....	8	895	227
Oklahoma.....	1	223	52
Oregon.....	1	233	53
..	6	2,323	601
..	1	164	42
..	1	31	..
Tennessee.....	3	842	188
Texas.....	2	673	153
Utah.....	1	58	..
Vermont.....	1	144	38
Virginia.....	2	542	132
West Virginia.....	1	41	..
Wisconsin.....	2	622	117
Totals.....	77	21,587	5,194

\* Excluding fifth or intern year students.

The ten schools in Canada reported 2,105 residents of Canada and 849 nonresidents. Their definition of a resident varied from students whose permanent address is within one of the provinces of Canada or the specific province in which the school is located to home address on registration and taxpayers. The greatest number of nonresidents in any one school were found at McGill University Faculty of Medicine (336), where only 141 residents of Canada were enrolled. This school has always obtained a large portion of its student body from the United States. At Dalhousie University Faculty of Medicine there were 113 nonresidents out of a student body of 178. All other institutions registered fewer than 100 nonresidents but more than twenty-five with one exception—the University of Saskatchewan School of Medical Sciences—with only two out of an enrolment of forty-seven.

Comparing the figures for Canada with those in table 4, classifying birth place reveals, as in the United States, somewhat similar figures: 2,435 born in Canada and 519 elsewhere, compared with 2,105 residents and 849 nonresidents.

nonresidents was the University of Tennessee College of Medicine, which had 222 residents and 215 nonresidents, while at Ohio State University College of Medicine and the University of Texas School of Medicine no nonresidents were registered, and only one of 633 students of the University of Illinois College of Medicine was a nonresident.

## SCHOOLS, STUDENTS AND GRADUATES BY STATES

Medical schools are located in thirty-six states and the District of Columbia. In table 6 are tabulated the number of schools, students and graduates by states. New York, with the largest number of schools, nine, naturally had the greatest number of students and graduates, 2,534 and 583 respectively. Pennsylvania with six schools had 2,323 students and 601 graduates. Illinois with five schools, 2,144 students and 626 graduates, ranks third, while Massachusetts with three schools, 1,138 students and 287 graduates and California with four schools, 1,058 students and 271 graduates complete the group of states having a medical school enrolment over 1,000.

In the seventy-seven medical schools in the United States, including those that offer only preclinical courses, there were 21,587 students and 5,194 graduates. Students internship as a requirement for the degree, or fifth year students, are not included in this figure. Neither are part-time, special and graduate students.

The greatest number of graduates in any one state were the 626 who completed their courses in Illinois schools. New York with four more schools than Illinois had forty-three fewer graduates and Pennsylvania with one more school had twenty-five fewer graduates than Illinois and eighteen more than New York. Three other states had more than 200 graduates. Eleven states had more than 100 but less than 200 graduates. All others had less than 100.

## REQUIRED HOSPITAL INTERNSHIPS

The medical schools and licensing boards requiring or planning to require a hospital internship for the M.D. degree and state licensure, respectively, are shown in tables 7 and 8. The effective date of the requirement is shown in both tables. Thirteen schools in the United States and four in Canada make the internship a prerequisite for a degree. A few of the medical schools will accept research or other clinical work in lieu of hospital service. Since 1915 the M.D. degree of the University of Minnesota Medical School has been

five academic years of seven and a half months each by a course covering four years of nine months. The fifth year may be spent in an internship in an approved hospital or in further medical study at McGill or at another medical school approved by it. The changed curriculum was inaugurated for the freshman class of 1936-1937. It will not affect the students who began their course under the former system.

TABLE 8.—Internship Required by Medical Licensing Boards

	Effective Date		Effective Date
Alabama.....	1939	Oklahoma.....	1933
Alaska.....	1939	Oregon.....	1933
.....	.....	Pennsylvania.....	1914
.....	.....	Rhode Island.....	1917
Illinois.....	1923	South Dakota.....	1925
Iowa.....	1924	Utah.....	1925
Louisiana.....	1939	Vermont.....	1924
Michigan.....	1922		
New Hampshire.....	1933		
New Jersey.....	1916		
North Dakota.....	1915		

Duke University School of Medicine grants the degree after completion of the senior year, but all graduates are required to spend at least two years in hospital or laboratory work after graduation.

As revealed in table 8, twenty states, Alaska and the District of Columbia require that applicants for licensure shall have completed a hospital internship. The first state to adopt this requirement was Pennsylvania in 1914. The New Hampshire law became effective Jan. 1, 1938, while in Alabama and Louisiana it will be in force after Jan. 1, 1939.

While some of the medical schools and licensing boards have their own list of hospitals acceptable for intern training, generally the Council's list of hospitals approved for internships is followed. A revised edition will be found beginning on page 822.

During 1937-1938 there were 1,132 students of the United States and 123 in Canada reported as interning, a total of 1,255.

## GRADUATES AND INTERNSHIPS

In table 9 are enumerated the graduates of the United States and Canada from July 1, 1936, to July 1, 1937, who have served or are still engaged as interns. Included also are figures for those schools which require the internship or other acceptable clinical work as a requirement for graduation. There were 5,852 fifth year students or graduates interning, the majority commencing the internship July 1, 1937, and ending July 1, 1938. The number of graduates and those who completed the medical course during the period July 1, 1936, to July 1, 1937, was 5,946; 4,760 graduates of medical schools and 1,186 fifth year students. Of these, ninety-four, 1.6 per cent, either were not successful in securing or did not desire internships. Several of the fifth year students satisfied this requirement by research or other clinical work. These 4,760 graduates and 1,186 intern students represented 4,383 graduates and 1,064 intern students of the United States and 377 graduates and 122 intern students in Canada. In the Canadian schools, of the 499 graduates or intern students, 467 were serving internships and thirty-two are unaccounted for.

Of the 5,852, 1,058 in the United States and 122 in Canada were completing the fifth year requirement of the schools they attended in order to obtain the M.D. degree, a total of 1,180.

TABLE 7.—Internship Required by Medical Schools

	Effective Date
University of California Medical School.....	1919
College of Medical Evangelists.....	1927
University of Southern California School of Medicine.....	1933
Stanford University School of Medicine.....	1919
Loyola University School of Medicine.....	1922
Northwestern University Medical School.....	1920
University of Illinois College of Medicine.....	1922
University of Minnesota Medical Center.....	1934
University of Michigan School of Medicine.....	1924
University of Wisconsin School of Medicine.....	1915
Duke University School of Medicine.....	1932
University of Cincinnati College of Medicine.....	1926
Marquette University School of Medicine.....	1920
Canada	
University of Manitoba Faculty of Medicine	
Dalhousie University Faculty of Medicine	
McGill University Faculty of Medicine	
University of Montreal Faculty of Medicine	

\* Requires a two year internship.

conditioned on an internship. Rush Medical College, which has required the internship for the M.D. degree since 1919, and the School of Medicine of the Division of Biological Sciences, University of Chicago, since 1930, discontinued this formal requirement in 1936. McGill University Faculty of Medicine reorganized its medical curriculum into a course of five years, including an internship replacing the former course spread over

With the exception of one, every school in the list had more than 90 per cent of its graduates serving internships and in fifty schools 100 per cent interned. Excluding those schools that require the internship for graduation, 98 per cent of all graduates here listed have obtained or are obtaining this added experience.

TABLE 9.—*Graduates from July 1, 1936 to July 1, 1937 Who Have Served Internships*

School	Graduates	Interned
University of Arkansas.....	61	59
University of .....	63*	63
College of .....	102*	102
University .....	43*	43
Stanford University .....	63*	63
University of Colorado.....	48	45
Yale University .....	47	47
Georgetc.....	117	117
George.....	59	59
Harvaró.....	35	34
Emory.....	55	55
University of Georgia.....	33	30
Loyola University .....	115*	112
Northwestern University .....	141*	141
Rush Medical College.....	289	289
Division of Biological Sciences.....	70	65
University of Illinois.....	150*	147
Iodiana University .....	97	97
State University of Iowa.....	80	80
University of Kaosas.....	69	69
University of Louisville.....	89	87
Louisiana State University.....	55*	55
Tulane University .....	113	112
Johns Hopkins University.....	63	53
University of Maryland.....	114	114
Boston University .....	56	53
Harvard University .....	139	137
Tufts College .....	117	117
University of Michigan.....	95	95
Wayne University .....	78*	78
University of Moocosota.....	117*	117
St. Louis University.....	122	122
Washington University .....	94	94
Creighton University .....	59	59
University of Nebraska.....	87	87
Albany Medical College.....	21	21
Long Island College.....	51	51
University of Buffalo.....	58	56
Columbia University .....	94	94
Cornell University .....	71	70
New York Medical College.....	89	86
New York University .....	139	132
University of Rochester.....	35	35
Syracuse University .....	40	40
Duke University .....	53	53
University of Cincinnati.....	72*	72
Western Reserve University.....	61	61
Ohio State University.....	94	94
University of Oklahoma.....	59	59
University of Oregon.....	53	53
Hahnem.....	121	121
Jefferson .....	138	138
Temple.....	116	116
University of Pennsylvania.....	134	131
Woman's Medical College.....	23	22
University of Pittsburgh.....	62	62
Medical College of South Carolina.....	45	45
University of Tennessee.....	102	98
McHarry Medical College.....	35	35
Vanderbilt University .....	51	51
Baylor University .....	78	72
University of Texas.....	79	78
University of Vermont.....	50	50
University of Virginia.....	61	60
Medical Col.....	82	79
University.....	48	48
Marquette .....	65*	65
University of Alberta.....	32	31
University of Manitoba.....	49*	49
Dalhousie University .....	32*	32
Queen's University .....	46	42
University of Western Ontario.....	46	46
University of Toronto.....	109	109
McGill University .....	103	103
University of Montreal.....	41*	41
Laval University .....	40	14
Totals.....	5,946	5,852

\* Internship or other acceptable clinical work is a requirement after graduation.

## DISTRIBUTION BY SEX

Students and graduates in the United States and Canada classified by sex are shown in table 10. Seventy-seven schools had both men and women students, of which sixty had women graduates. Women were enrolled in nine of the eleven schools offering only the first two years of the medical course in the United States

and Canada. Altogether there were 23,234 men and 1,307 women students, and 5,439 men and 252 women graduates. Of these, 20,426 male students and 4,957

TABLE 10.—*Distribution by Sex*

School	Students		Graduates	
	Men	Women	Men	Women
University of Alabama.....	84	7	..	..
University of Arkansas.....	257	11	77	3
University .....	218	29	50	13
College of .....	355	29	95	4
University .....	183	7	41	2
Stanford University .....	225	12	62	1
University of Colorado.....	192	15	43	6
Yale University .....	177	13	37	3
Georgetown University .....	350	..	107	..
George Washington University.....	228	21	57	11
Howard University .....	122	9	22	..
Emory University .....	220	..	60	..
University of Georgia.....	143	8	32	2
Loyola University .....	388	15	112	3
Northwestern University .....	541	17	137	4
Rush Medical College.....	250	12	163	5
Division of Biological Sciences.....	261	26	48	4
University of Illinois.....	592	42	144	6
Indiana University .....	412	17	86	1
State University of Iowa.....	355	14	81	7
University of Kansas.....	273	16	60	..
University of Louisville.....	335	7	93	..
Louisiana State University.....	294	13	53	2
Tulane University .....	453	15	110	3
Johns Hopkins University.....	232	29	71	5
University of Maryland.....	358	15	98	4
Boston University .....	177	22	38	5
Harvard University .....	520	..	135	..
Tufts College .....	402	17	104	5
University of Michigan.....	441	40	98	4
Wayne University .....	249	11	74	4
University of Minnesota.....	439	50	114	3
University of Mississippi.....	81	3	..	..
University of Missouri.....	76	3	..	..
St. Louis University.....	461	..	103	..
Washington University .....	323	20	91	5
Creighton University .....	253	9	67	1
University of Nebraska.....	312	7	75	..
Dartmouth Medical School.....	85	..	..	..
Albany Medical College.....	101	..	..	..
Long Island College.....	341	20	84	4
University of Buffalo.....	249	9	57	1
Columbia University .....	274	31	84	6
Cornell University .....	254	20	58	8
New York Medical College.....	254	14	55	9
New York University .....	455	35	116	8
University of Rochester.....	164	13	37	2
Syracuse University .....	165	11	35	1
University of North Carolina.....	59	6	..	..
Duke University .....	242	10	44	3
Wake Forest College.....	41	..	..	..
University of North Dakota.....	44	4	..	..
University of Cincinnati.....	278	16	71	1
Western Reserve University.....	256	14	60	3
Ohio State University.....	214	17	68	4
University of Oklahoma.....	313	10	50	2
University of Oregon.....	239	14	53	2
Hahnem.....	545	..	129	..
Jefferson .....	498	..	134	..
Temple.....	414	27	106	7
University of Pennsylvania.....	450	20	135	4
Woman's Medical College.....	..	106	..	25
University of Pittsburgh.....	217	13	58	3
Medical College of South Carolina.....	154	10	42	..
University of South Dakota.....	29	2	..	..
University of Tennessee.....	419	18	99	6
McHarry Medical College.....	197	9	33	2
Vanderbilt University .....	191	8	45	3
Baylor University .....	285	17	69	4
University of Texas.....	345	26	78	2
University of Utah.....	54	4	..	..
University of Vermont.....	135	6	37	1
University of Virginia.....	240	7	53	3
Medical College of Virginia.....	265	50	72	4
West Virginia University.....	37	4	..	..
University of Wisconsin.....	279	19	48	4
Marquette University .....	315	9	64	1
University of Alberta.....	205	13	31	..
University of Manitoba.....	207	15	47	2
Dalhousie University .....	176	2	31	1
Queen's University .....	292	..	54	..
University of Western Ontario.....	197	15	21	2
University of Toronto.....	742	69	169	10
McGill University .....	455	19	97	..
University of Montreal.....	182	5	41	..
Laval University .....	504	3	41	..
University of Saskatchewan.....	42	5	..	..
Totals.....	23,234	1,307	5,439	252

graduates were in schools in the United States and 2,808 and 482 respectively in Canada. Likewise there were 1,161 women students and 237 graduates in the United States, and 146 students and fifteen graduates in Canada. Of the 23,234 and 5,439 male students and graduates, 2,676 and 668 respectively were enrolled



in schools in the United States which are not coeducational or do not admit women, and 292 and fifty-four in Canada. An average of sixteen women students were

TABLE 11.—*Women in Medicine in the United States*

Year	Women Students	Percentage of All Students	Women Graduates	Percentage of All Graduates
1905.....	1,073	4.1	219	4.0
1910.....	907	4.0	116	2.6
1915.....	592	4.0	92	2.6
1920.....	518	5.8	122	4.0
1925.....	910	5.0	204	5.1
1926.....	935	5.0	212	5.4
1927.....	964	4.9	189	4.7
1928.....	929	4.5	207	4.9
1929.....	925	4.4	214	4.8
1930.....	955	4.4	204	4.5
1931.....	990	4.5	217	4.6
1932.....	955	4.3	203	4.2
1933.....	1,056	4.7	214	4.4
1934.....	1,020	4.5	211	4.2
1935.....	1,077	4.7	207	4.1
1936.....	1,133	5.0	246	4.7
1937.....	1,113	5.1	238	4.4
1938.....	1,161	5.4	237	4.6

TABLE 12.—*Part-Time, Special and Graduate Students in Medical Schools 1937-1938*

	Part-Time Students	Special Students	Graduate Students
University of Alabama.....	7	4	..
University of Arkansas.....	1	4	..
University of Southern California.....	..	12	6
University of Colorado.....	..	..	34
.....	..	1	..
.....	2	..	1
.....	3	..	..
.....	5	..	..
Division of Biological Sciences.....	..	31	..
Loyola University.....	..	4	..
Northwestern University.....	..	111	95
Rush Medical College.....	..	2	14
University of Illinois.....	..	19	79
Indiana University.....	..	1	1
State University of Iowa.....	1	2	14
University of Kansas.....	5	1	9
University of Louisville.....	..	1	..
Louisiana State University.....	5	..	..
Johns Hopkins University.....	6	14	24
University of Maryland.....	..	3	..
Boston University.....	..	2	6
.....	6	4	..
.....	5	6	27
.....	..	2	..
.....	5	..	..
St. Louis University.....	12	..	..
Washington University.....	..	2	21
Creighton University.....	..	4	..
University of Nebraska.....	..	..	12
Dartmouth Medical College.....	..	..	2
Columbia University.....	..	..	69
Cornell University.....	13	7	6
New York University.....	13	5	141
University of Buffalo.....	16	5	4
University of North Carolina.....	3	19	6
University of North Dakota.....	..	..	3
University of Oklahoma.....	..	..	5
University of Oregon.....	..	9	14
University of Pittsburgh.....	3	3	..
Woman's Medical College.....	..	..	1
University of Tennessee.....	..	9	9
Vanderbilt University.....	5	20	50
Baylor University.....	5	..	..
.....	4	2	..
.....	1	..	..
.....	2	..	..
.....	2	1	..
.....	4	..	37
.....	4	68	32
.....	1	2	..
Totals.....	125	376	722

enrolled in the seventy-eight coeducational institutions in the United States and Canada and four graduates from sixty colleges.

#### WOMEN IN MEDICINE IN THE UNITED STATES

During 1937-1938 there were 1,161 women studying medicine in the United States, forty-eight more than during the session 1936-1937. The percentage of women

to all students for the academic year 1937-1938 was 5.4. There were 237 graduates, one less than last year. Of the women matriculants, 106 were in attendance at the one medical college for women, while 1,055 were matriculated in seventy-eight coeducational schools. From the Woman's Medical College twenty-five were graduated, while 212 secured their degrees from coeducational institutions. These data are given in table 11. Of interest also is the fact that thirteen schools enrolled more than twenty-five women. In the fourteen years since 1925, 3,008 women have graduated in medicine. The Council's list of hospitals approved for internships includes over a hundred hospitals offering about 250 internships open to women. Statistics are at present being compiled of the number of women physicians by county and state, based on the data included in the American Medical Directory, 1938 edition. This study has revealed that there are 7,470 women physicians in the United States.

#### PART-TIME, SPECIAL AND GRADUATE STUDENTS

In addition to the regularly enrolled students, there were 1,223 part-time, special and graduate students pursuing medical subjects in forty-nine medical schools in the United States and five in Canada. This group consists of 125 part-time, 376 special and 722 graduate students. These data will be found in table 12.

The part-time students were enrolled in twenty-five schools, twenty-two in the United States and three in Canada. The largest group enrolled in any one school was sixteen studying at the University of Buffalo School of Medicine. Thirteen were registered in New York University College of Medicine and twelve at St. Louis University School of Medicine. Less than eight were enrolled in twenty-one schools.

The 376 special students represented twenty-nine schools in the United States and three in Canada. The greatest number (111) were at Northwestern University School of Medicine; at the University of Toronto Faculty of Medicine sixty-eight were in attendance; the School of Medicine of the Division of Biological Sciences of the University of Chicago had thirty-one, Vanderbilt twenty, North Carolina and Illinois nineteen.

Students pursuing subjects leading to higher degrees were studying in twenty-eight schools. Altogether there were 722 such, of whom more than sixty were studying in each of four schools, the greatest number (141) having been enrolled at New York University.

The following schools matriculated these three types of students: Universities of Iowa, Kansas, Johns Hopkins, Wayne, New York University, Buffalo, North Carolina, Vanderbilt and Toronto.

Among Canadian schools seven part-time, seventy-one special and sixty-nine graduate students were enrolled.

#### GRADUATES WITH BACCALAUREATE DEGREES

From the figures contained in table 13, it can be noted that 3,685 of the 5,691 graduates of medical schools for the session 1937-1938 also hold baccalaureate degrees. Only five schools in the United States required a degree for admission for the session, one required four years, four schools admitted students with three years of college work provided the baccalaureate degree would be conferred in absentia at the end of the first year in medicine, thirty-nine required three years, one school had a requirement equivalent to two and one-half years and twenty-seven exacted the two year requirement. Twenty-three schools offer a B.S. in medicine degree at some time during the

medical course—seven at the end of the first year, thirteen after two years in medicine and two after three years, while in one school it can be obtained at any time during the medical course. All the graduates of Stanford, Johns Hopkins, Wayne, Cornell, New York

TABLE 13.—*Graduates with Baccalaureate Degrees*

School	Graduates	Number Holding Degrees
University of Arkansas School of Medicine.....	80	23
University of California Medical School.....	63	61
College of Medical Evangelists.....	102	10
University of Southern California School of Medicine	43	40
Stanford University School of Medicine.....	63	63
University of Colorado School of Medicine.....	49	40
Yale University School of Medicine.....	40	33
Georgetown University School of Medicine.....	107	86
George Washington University School of Medicine	68	43
Howard University College of Medicine.....	22	20
Emory University School of Medicine.....	60	36
University of Georgia School of Medicine.....	34	12
Loyola University School of Medicine.....	115	29
Northwestern University Medical School.....	141	91
Rush Medical College.....	168	157
Division of Biological Sciences.....	52	36
University of Illinois College of Medicine.....	150	29
Iodiana University School of Medicine.....	87	32
State University of Iowa College of Medicine.....	83	22
University of Kansas School of Medicine.....	67	40
University of Louisville School of Medicine.....	93	35
Louisiana State University Medical Center.....	55	14
Tulane University of Louisiana School of Medicine	113	60
Johns Hopkins University School of Medicine.....	76	76
University of Maryland School of Medicine.....	102	71
Boston University School of Medicine.....	43	38
Harvard University Medical School.....	135	126
Tufts College Medical School.....	109	99
University of Michigan.....	102	86
Wayne University College.....	78	78
University of Minnesota Medical School.....	117	17
St. Louis University School of Medicine.....	103	56
.....	96	77
.....	68	23
.....	75	43
.....	25	24
.....	88	76
.....	58	21
Columbia Univ. College of Physicians and Surgeons	90	84
Cornell University Medical College.....	66	66
New York Medical College.....	57	49
New York University College of Medicine.....	124	124
University of Rochester School of Medicine.....	39	35
Syracuse University College of Medicine.....	36	32
.....	47	28
.....	72	21
.....	63	63
.....	92	67
.....	52	29
.....	55	55
.....	129	77
.....	134	134
.....	113	88
University of Pennsylvania.....	139	132
Woman's Medical College of Pennsylvania.....	25	20
University of Pittsburgh School of Medicine.....	61	47
Medical College of the State of South Carolina.....	42	20
University of Tennessee College of Medicine.....	105	61
Meharry Medical College.....	35	29
Vanderbilt University School of Medicine.....	48	48
Baylor University College of Medicine.....	73	34
University of Texas School of Medicine.....	80	38
University of Vermont College of Medicine.....	38	33
University of Virginia Department of Medicine.....	56	31
Medical College of Virginia.....	76	47
University of Wisconsin Medical School.....	52	52
Marquette University School of Medicine.....	65	23
University of Alberta Faculty of Medicine.....	31	12
University of Manitoba Faculty of Medicine.....	49	11
Dalhousie University Faculty of Medicine.....	32	15
Queen's University Faculty of Medicine.....	54	4
University of Western Ontario Medical School.....	33	11
University of Toronto Faculty of Medicine.....	119	16
McGill University Faculty of Medicine.....	97	57
University of Montreal Faculty of Medicine.....	41	36
Laval University Faculty of Medicine.....	41	38
Total.....	5,691	3,685

University, Western Reserve, Oregon, Jefferson, Vanderbilt and Wisconsin held baccalaureate degrees. Four of these schools—Stanford, Wayne, Oregon and Wisconsin—do not have a degree requisite, their requirement being three years.

#### SCHOOLS, STUDENTS AND GRADUATES IN THE UNITED STATES, 1905-1938

The number of medical schools, students and graduates in the United States for each five year period from 1905 to 1920 and for each year since is shown in

table 14. The total number of undergraduate medical students for the college session 1937-1938 was 21,587. In 1905 in the 160 schools then existing there were 26,147 students. This tabulation includes data for only those taking medical courses leading to the M.D. degree. They do not include part-time and special students even though their work may later be accepted for the M.D. degree, since they are reported as part-time and special students and not candidates for a medical degree. Omitted from these figures also are university graduate students majoring in the medical school but not candidates for the M.D. degree. In the ten years from 1910 to 1920 there was a steady decrease in the enrolment, while from 1921 to 1935 there was a continuous increase. In 1938 the enrolment decreased by 508 from the preceding year. The number of students admitted in 1938 was 977 fewer than in 1936 and 1,301 fewer than in 1935. In 1935 the Council advised against the admission of larger classes than can be accommodated or than can reasonably be expected to satisfy approved scholastic standards. Many of the schools, as will be noted in table 14, heeded this declara-

TABLE 14.—*Schools, Students and Graduates in the United States—1905-1938*

Year	No. Schools	Students*	Graduates
1905.....	160	26,147	5,006
1910.....	131	21,526	4,440
1915.....	96	14,891	3,536
1920.....	85	13,793	3,047
1921.....	83	14,468	3,186
1922.....	81	15,635	2,520
1923.....	80	16,960	3,120
1924.....	79	17,728	3,502
1925.....	80	18,200	3,974
1926.....	79	18,840	3,962
1927.....	80	19,662	4,085
1928.....	80	20,545	4,262
1929.....	76	20,678	4,416
1930.....	76	21,507	4,565
1931.....	76	21,982	4,785
1932.....	76	22,135	4,938
1933.....	77	22,466	4,895
1934.....	77	22,709	5,035
1935.....	77	22,888	5,101
1936.....	77	22,564	5,183
1937.....	77	22,095	5,377
1938.....	77	21,587	5,194

\* Includes figures for schools offering preclinical courses.

tion and decreased their freshman enrolment in the interest of better medical education, and others are planning to do so in the future. This may not mean any decrease in the number of medical graduates, because more careful selection will doubtless decrease the number of students who fail to complete their course because of poor scholarship.

Again referring to table 14, it will be noted that the total number of graduates was 5,194, which was 183 fewer than were graduated in 1937. With the exception of the slight decrease in the number of graduates in 1933 as compared with previous years, there was a steady increase from 1926 to 1937 and in 1938 a decrease. In the seventy-seven recognized medical schools in the United States during 1937-1938 there were 21,587 students, including those having an incomplete course, and 5,194 graduates.

#### STUDENTS BY CLASSES, 1930-1938

The number of students in the various classes of the medical schools in the United States for each session from 1930-1931 to 1937-1938 inclusive is shown in table 15. The total attendance for the first year for the session 1937-1938 was 5,791, 119 fewer than the number enrolled for the session 1936-1937. Since the

session 1933-1934, when there were 6,457 enrolled, there has been a reduction in this class of 666. The total attendance for 1937-1938 for the remainder of the classes was respectively 5,225, 4,986, 5,036 and 1,132, a total of 22,719. The two medical schools of the University of Chicago are not operated under the

TABLE 15.—Students in the United States Shown by Classes—1930-1938

	1st Year	2d Year	3d Year	4th Year	5th Year†	Total
1930-1931	6,456	5,538	5,080	4,908	1,025	23,007
1931-1932	6,260*	5,462*	4,932*	4,885*	1,067	23,202
1932-1933	6,426*	5,479*	5,017*	4,015*	1,106	23,572
1933-1934	6,457†	5,571†	4,985†	4,937†	1,183	23,952
1934-1935	6,350†	5,624†	5,142†	4,905†	1,233	21,121
1935-1936	6,005†	5,458†	5,230†	5,020†	1,213	23,777
1936-1937	5,910*	5,269*	5,140*	5,158*	1,255	23,350
1937-1938	5,791*	5,225*	4,986*	5,036*	1,132	22,719

\* Enrolment for the two medical schools of the University of Chicago not included.

† Enrolment for the two medical schools of the University of Chicago and Duke University not included.

‡ Intern year.

promotion by class system but on an individual plan. It is not possible for the schools to report their students in this manner and accordingly they are not included in the figures by classes, but their enrolment is included in the total. At the School of Medicine of the Division of Biological Sciences of the University of Chicago there were 287 and 262 at Rush Medical College, a total of 549. There were 631 fewer students enrolled than in 1936-1937, 1,058 fewer than 1935-1936. The sophomore enrolment decreased forty-four, the junior

TABLE 16.—Negro Students and Graduates

School	Enrolment by Classes During 1937-1938					Graduates
	1st Year	2d Year	3d Year	4th Year	Totals	
College of Medical	34	35	33	19	121	18
Howard University	1	1	1	1	4	1
Loyola University	1	1	1	1	4	1
Univ. of Chicago	1	1	1	1	4	1
University of Illinois	1	1	1	1	4	1
Indiana University School of Medicine	1	1	1	1	4	1
University of Kansas School of Medicine	1	1	1	1	4	1
Boston University School of Medicine	1	1	1	1	4	1
Tufts College Medi	1	1	1	1	4	1
Wayne University	1	1	1	1	4	1
University of Michi	1	1	1	1	4	1
University of Minn	1	1	1	1	4	1
Columbia Univ. Co	1	1	1	1	4	1
New York Medical College	1	1	1	1	4	1
New York University College of Medicine	1	1	1	1	4	1
Western Reserve University School of Medicine	1	1	1	1	4	1
Ohio State University College of Medicine	1	1	1	1	4	1
Temple University School of Medicine	1	1	1	1	4	1
University of Pennsylvania School of Medicine	79	57	35	35	206	35
Meharry Medical College	1	1	1	1	4	1
University of Toronto	1	1	1	1	4	1
McGill University Faculty of Medicine	1	1	1	1	4	1
University of Montreal Faculty of Medicine	1	1	1	1	4	1
Totals	126	104	77	64	372	61
Totals during 1936-1937	130	88	70	82	372	84

\* Fifth year student.

† Includes fifth year enrolment of two.

enrolment 154, the senior enrolment 122 and the fifth or intern year students 123. These figures are exclusive of the figures for the two schools referred to.

#### NEGRO STUDENTS AND GRADUATES

The Negro medical students for the session 1937-1938 enrolled in the United States and Canada are recorded by classes in table 16. Totals for the session 1936-1937 are shown for comparison. There were 372

such students and sixty-one graduates. The total number of students for 1937-1938 was the same as for 1936-1937, but there was a decrease of twenty-three in the number of graduates this year. The only medical school for Negro youth, Meharry Medical College, matriculated 206 students and had thirty-five graduates. At Howard University College of Medicine they comprise a majority of those in attendance and for this session 121 students of a class of 131 and eighteen of the twenty-two graduates were Negroes. These two schools graduate the majority of the Negro students. All other schools (six) graduated eight. In eighteen schools in the United States, exclusive of Meharry and Howard, forty students were enrolled. There were five Negro students in two Canadian schools. The enrolment by classes in all schools was first year 126, second year 104, third year seventy-seven, and fourth year sixty-four, a total of 372, including a fifth year student in a Canadian school. In 1936-1937 corresponding figures were 130, eighty-eight, seventy, eighty-two, 372. The freshman enrolment decreased four, the sophomores increased sixteen, the juniors increased seven and the seniors decreased eighteen. A study is being made of the Negro physicians in the United States by state and county from the data included in

TABLE 17.—Fees, 1937-1938—United States and Canada\*

	Schools
Under \$100.....	4
\$100 to \$200.....	9
200 to 300.....	23
300 to 400.....	16
400 to 500.....	23
500 or over.....	13
Total.....	87

\* Based on fees charged resident students.

the 1938 edition of the American Medical Directory. A total of 3,392 Negro physicians are listed in the Directory.

#### FEES

In table 17 the eighty-seven medical schools of the United States and Canada have been grouped according to the tuition fees charged. To arrive at the figures listed, an average was computed of the resident fees for each school. Included in these fees are the various minor charges, such as for matriculation, breakage, diploma and graduation. Four schools have fees under \$100. These were Louisiana State University, University of North Dakota, University of Oklahoma and University of Texas. The thirteen schools having fees over \$500 are College of Medical Evangelists, Yale, George Washington, Johns Hopkins, Columbia, Cornell, Long Island, New York Medical College, New York University, Syracuse, Buffalo, Hahnemann and Pennsylvania. Thirty-one schools in the United States and five in Canada made an additional charge for non-residents ranging from \$50 by the Universities of Minnesota, Mississippi, Cincinnati (nonresidents of Cincinnati) and Virginia to \$300 exacted by the University of California and Louisiana State University and \$425 by Harvard University.

Table 17 compared with a similar compilation in the 1937 educational statistics indicates that this year there are only twenty-three schools in the \$200 to \$300 bracket, whereas in 1936-1937 there were twenty-seven; likewise in the \$300 to \$400 group there are sixteen, as compared with fifteen for the last college

session; in the \$400 to \$500 bracket the figure increased one and in the \$500 or over class there are now thirteen schools, an increase of two.

The lowest nonresident fee in the United States was \$50, as has been indicated. One school in Canada has a nonresident fee of \$5 for the first year and \$10 for the second, third and fourth years. Eleven schools in the United States and Canada have a nonresident fee

CITIZENS OF THE UNITED STATES ENROLLED IN  
FACULTIES OF MEDICINE ABROAD

A study of the number of citizens of the United States pursuing medical courses in faculties of medicine abroad has been carried on by the Council since 1931, when it became evident that great numbers were going to Europe to study. Table 18 lists the institutions in which such students are enrolled. This tabulation

TABLE 18.—Citizens of the United States Enrolled in Faculties of Medicine Abroad—1937-1938

	Totals	Students, Academic Year 1937-1938			Totals	Students, Academic Year 1937-1938	
		Enrolled	Completed Course			Enrolled	Completed Course
Argentina .....	2	0		Germany (continued)			
Universidad Nacional de La Plata.....		2**	0**	Ludwig-Maximilians-Universität, München.....	15	11	
Austria .....	172	45		Westfälische Wilhelms-Universität, Münster.....	2	0	
Karl-Franzens-Universität, Graz.....		4	2	Universität Rostock .....	1	0	
Leopold-Franzens-Universität, Innsbruck.....		2	1	Julius-Maximilians-Universität, Würzburg.....	1	0	
Medizinische Fakultät der Universität Wien.....		166**	42**	Greece .....	18	0	
Belgium .....	6	0		National University of Athens.....	18*	0*	
Université Libre de Bruxelles.....		5	0	Hungary .....	23	8	
Université Catholique de Louvain.....		1	0	Magyar Királyi Pázmány Petrus Tudományegyetem, Budapest .....	11	7	
Brazil .....	2	0		Magyar Királyi Tisza-István-Tudományegyetem, Debrecen .....	4*	0*	
Faculdade de Medicina de Parana, Curitiba.....		2*	0*	Magyar Királyi Erzsébet Tudományegyetem, Pécs .....	5	0	
China .....	24	1		Magyar Királyi Ferenc József Tudományegyetem, Szeged .....	3	1	
Peiping Union Medical College, Peiping.....		7	0	Ireland .....			
Pennsylvania Medical School, Shanghai.....		17	1	Queer .....	1	1	
Czechoslovakia .....	7	2		Univ .....	3	3	
Univerzita .....		2	0	College, Dublin .....			
Deutsche .....		1	1	Italy .....			
Universita Karlova, Praha.....		4	2	Reg .....	48	16	
England .....	20	6		Reg .....	1	1	
.....		2	0	Reg .....	1	1	
Charing Cross Hospital Medical School.....		1	0	Reg .....	1	1	
King's College .....		1	0	Reg .....	2	0	
King's College Hospital Medical School.....		1	1	Reg .....	83**	4**	
London (Royal Free Hospital) School of Medicine for Women .....		1	1	Reg .....	1	1	
St. Univ .....		12	1	Reg .....	4*	2*	
University of Oxford.....		1	0	Reg .....	4	0	
University of Sheffield.....		2*	0*	Regia Università di Roma.....	67	21	
Estonia .....	1	1		Lebanon .....	28	0	
Université de Tartu.....		1	1	American University of Beirut.....	28	0	
France .....	20	2		Poland .....	16	0	
.....		1	1	Uniwersytet Cracow .....	3	0	
.....		3*	1*	Uniwersytet Poznański .....	5	0	
.....		1	0	Uniwersytet Józefa Piłsudskiego, Warszawa.....	3*	0*	
Université de Paris.....		7	6	Uniwersytet Stefana Batorego, Wilno.....	5	0	
Université de Strasbourg.....		1	1	Scotland .....	525	51	
Germany .....	225	22		School of Medicine of the Royal Colleges, Edinburgh .....	226	23	
F .....		25	0	University .....	11	0	
F .....		12	1	Anderson .....	26	15*	
S .....		1	0	St. Mungo's College, Glasgow.....	249	4	
S .....		1	1	University of Glasgow.....	9	1	
F .....		1	1	University of St. Andrews.....	4	3	
J .....		1	1	South Africa, Union of.....	1	0	
.....		4	0	University of Witwatersrand, Johannesburg.....	1	0	
.....		4	0	Switzerland .....			
.....		2	0	.....	50	22	
Halle-Witten.....		3**	0**	.....	44	32	
.....		14	9	.....	32*	25*	
.....		11	0	Université de Lausanne.....	29	26	
Thuringia .....	1	0		Universität Zürich .....	15	15	
Christlan .....	3	0		Yugoslavia .....	6	0	
Universität Bonn .....	3	0		.....	5*	0*	
Universität Leipzig .....	2	0		.....	1*	0*	
Philpps-Universität, Marburg.....	1	0		Totals by countries.....	1,345	318	

\* 1936-1937 figures.      \*\* 1935-1936 figures.      \*\*\* 1934-1935 figures.

of \$100 or less, sixteen schools between \$100 and \$200, six schools between \$200 and \$300, and one has a fee of \$425.

The data and text regarding table 5 listing the number of residents and nonresidents and the definition of the term resident may be of interest in connection with the fees charged nonresidents. The fees are not listed in these statistics by individual schools other than in the descriptions beginning on page 815. The fees there given are for the session 1938-1939.

The average resident fee charged in medical schools of the United States was \$342.

covers the academic year 1937-1938. In a few cases, because figures were not available, it was necessary to reproduce figures from previous sessions for several schools known to have citizens of the United States enrolled. Including these figures, there were 1,346 students and 318 graduates or those who completed their training in eighty-four institutions—seventy-eight schools in fifteen European countries, two in two South American countries and four in three countries of Asia. The files of the Association of American Medical Colleges indicate that the application record of many of these students show that they have made application

to medical schools in the United States without success. A study is also being carried on of the license record of foreign physicians.<sup>3</sup>

Table 19, recording the number of graduates of foreign medical faculties (representing both American and foreign born physicians) examined by licensing boards in the United States in eight years and the percentage failing, is of interest. In addition to the figures given

TABLE 19.—*Graduates of Faculties of Medicine Abroad Examined—1930-1937*

Year	Number Examined	Passed	Percentage Failed
1930.....	167	92	44.9
1931.....	158	91	42.4
1932.....	182	96	47.3
1933.....	200	129	35.5
1934.....	285	170	40.2
1935.....	437	303	30.7
1936.....	588	382	35.0
1937.....	919	636	30.7

a number have been periodically licensed without examination—by endorsement of their credentials, which are equivalent to licensure in this country. In 1937, 238 were so registered. This table makes no differentiation between United States citizens and those foreign born. It might be assumed that some of those who began the study of medicine in 1930 are returning to the United States to practice. The figure also includes many refugees from Germany and Austria.

ity of new students going abroad to study are migrating to these two institutions. Fifty-three of the eighty-four institutions listed had less than five students. During 1937-1938, according to the reports furnished, there were 1,346 students as compared with 1,631 during 1936-1937, 2,052 in 1932-1933 and 710 in 1930-1931.

Conferences with the governments of many European countries together with resolutions by the Council and the Federation of State Medical Boards have resulted in a diminution in the number of American born students being accepted by European schools.

The House of Delegates of the American Medical Association in 1936 endorsed a resolution urging that graduates of medical faculties of other countries be expected to prove their fitness for medical practice by being in possession of a license to practice in the country of their graduation and a certificate of internship in a hospital approved for such training or complete the fourth year in an American class A medical school.

In 1938 the House of Delegates adopted a resolution urging an additional requirement of full citizenship in the United States of all applicants from abroad. Several of the licensing boards in the United States have adopted special rules regarding the admission of physicians with foreign degrees because no agency exists for the evaluation of such credentials. One state has amended its statute requiring foreign graduates to complete a year in a medical school or serve a hospital internship in this country. A few others have board

TABLE 20.—*Citizens of the United States Enrolled in Faculties of Medicine Abroad—1930-1938*

	1930-1931		1931-1932		1932-1933		1933-1934		1934-1935		1935-1936		1936-1937		1937-1938	
	Enrolled	Completed Course	Enrolled	Completed Course	Enrolled	Completed Course	Enrolled	Completed Course	Enrolled	Completed Course	Enrolled	Completed Course	Enrolled	Completed Course	Enrolled	Completed Course
Argentina.....	114	3	175	6	271	3	233	9	235	6	183	45	185	54	172	45
Austria.....	3	0	4	1	10	1	11	0	19	3	15	3	13	1	6	0
Belgium.....	..	..	..	..	..	..	2	1	1	0	1	0	2	0	2	0
Brazil.....	..	..	..	..	12	0	15	0	18	1	19	1	18	1	24	1
China.....	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..
Colombia.....	..	..	..	..	19	0	7	0	10	0	11	3	13	4	7	3
Czechoslovakia.....	2	0	4	0	..	..	..	..	1	0	..	..	..	..	..	..
Dominican Republic.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
England.....	52	2	61	4	57	1	69	4	78	20	60	50	47	17	20	6
Estonia.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Finland.....	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..
France.....	25	2	62	6	78	5	86	2	89	4	75	4	40	14	13	6
Germany.....	72	1	189	5	439	42	331	8	246	25	204	28	145	109	107	23
Greece.....	..	..	..	..	4	1	9	0	13	0	15	0	18	0	18	0
Hungary.....	9	1	15	2	13	1	25	1	23	0	12	0	27	4	23	8
Ireland.....	14	1	21	0	20	0	4	1	6	1	7	4	7	2	4	4
Italy.....	78	11	155	4	282	14	238	25	286	30	265	65	265	65	212	47
Japan.....	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..
Lebanon.....	16	2	8	0	7	0	11	2	13	2	15	3	19	0	..	..
Lithuania.....	..	..	4	0	4	0	2	0	2	0	2	0	2	0	..	..
Mexico.....	1	0	1	1	..	..	..	..	..	..	..	..	..	..	..	..
Netherlands.....	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..
Netherlands Indies.....	..	..	..	..	1	0	1	0	1	0	..	..	2	0	..	..
Poland.....	2	0	3	0	9	0	14	4	12	1	9	1	14	1	16	0
Portugal.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Scotland.....	256	19	286	25	416	9	444	48	476	71	360	48	386	80	525	51
South Africa, Union of.....	..	..	1	0	..	..	..	..	..	..	..	..	..	..	1	0
Spain.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Switzerland.....	65	4	214	1	405	10	351	8	396	54	366	98	316	143	150	120
Yugoslavia.....	..	..	2	1	5	1	7	0	11	0	7	0	6	0	6	0
Totals.....	710	46	1,206	56	2,052	88	1,903	113	1,937	218	1,637	333	1,631	495	1,346	315

The enrolment of students in foreign countries for each session since 1930-1931 is shown in table 20. The largest numbers were enrolled in Austria, Germany, Italy, Scotland and Switzerland. The greatest number (249) in any one school was the enrolment of St. Mungo's College Medical School, Glasgow, followed by the School of Medicine of the Royal Colleges, Edinburgh, where 226 were enrolled. These are extramural schools and do not grant the M.D. degree. The major-

rulings requiring one or the other of these, several require citizenship, one state will not accept any graduates of foreign schools, and another requires the certificate of the National Board of Medical Examiners. Further, in order to maintain approval by the Council, hospitals in which these students seek internships may accept them only on the successful completion of parts I and II of the examinations of the National Board of Medical Examiners, and when suitable graduates of American schools are not available.



1. Commonwealth Fund of New York.

GRADUATE MEDICAL  
Opportunities for Practicing Physicians to Engage in

State	Location of Course	Sponsoring Agencies	Director of Program	Subjects	Duration of Course	Time Given	Type of Instruction
Alabama	Birmingham, Montgomery, Mobile and Co. societies	State Med. Assn. and Dept. of Pub. Health	Chairman, Comm. on P. G. Study, State Med. Assn.	Internal Medicine, Obstetrics, Pediatrics, Preventive Medicine and Syphilology	Varies	Varies	Lectures and Demonstrations
California	7 cities and towns	State Med. Assn. and other medical and health agencies	Chairman, Comm. on P. G. Activities	General	Varies	Spring and Fall	Conference, Symposium, Clinics and Demonstrations
	Stockton	San Joaquin Co. Med. Soc.	Chairman, Graduate Comm.	General	1 day weekly 7 times	Fall	Lectures and Clinics
	San Bernardino	San Bernardino and Orange Co. Med. Soces.	Chairman, Grad. Study Comm.	General	1 day monthly 6 times	Winter	Lectures and Clinics
	12 cities and towns	State Dept. Pub. Health and State Med. Assn.	Director, State Dept. Pub. Health	Syphilology	1 day	Spring	Lectures
	San Francisco	U. Calif. Med. Sch.	Dean, Med. Sch.	Digestive Diseases	3½ days	Spring	Lectures, Discussions and Clinics
		Stanford U. Sch. Med. and City Dept. of Health	Dean, Med. Sch.	General and Special	1 week	September	Lectures, Discussions, Clinics and Laboratory Experience
	San Francisco and Los Angeles	Calif. Heart Assn. (2 chapters)	Secretaries, San Francisco Heart Comm. and Los Angeles Heart Assn.	Heart Disease	2 days	November (in S. F.) January (in L. A.)	Symposiums and Clinics
	Los Angeles	Col. of Med. Evangelists	Chairman, Alumni Educ. Comm.	General	1 day	Fall and Spring	Graduate Assembly (Fall), Clinics and Symposiums (Spring)
Colorado		U. So. Calif. Sch. of Med.	Dean, Med. Sch.	Varies	Varies	Varies	Informal graduate instruction
	Denver	State Med. Soc.	Chairman, Midwinter P. G. Clinics Comm.	General	3 days	December	Graduate Assemblies with Clinics
		State Soces. of Colorado, Utah, Wyoming and New Mexico	Chairman, Rocky Mt. Med. Conference Exec. Comm.	Diseases common to Rocky Mountain states	3 days	Summer of alternate years	Graduate Assembly with Round Table Discussions
	Pueblo	Co. Med. Soc.	Chairman, Spring Clinics Comm.	General	2 days	April	Graduate Assembly with Clinics
	Grand Junction	Mesa Co. Med. Soc.	Chairman, Co. Soc. Comm.	General	1 day	April	Graduate Assembly
	18 towns	State Med. Soc.	Chairman, Comm. on Cancer Educ.	Cancer	1-3 days	Varies	Symposiums
Connecticut	4 towns	St. Bd. of Health and St. Med. Soc.	Secretary, St. Bd. of Health	Obstetrics and Pediatrics	1 day weekly 5 times	March and April	Lectures and Clinics
	New Haven	St. Med. Soc. and Yale U. Sch. Med.	Chairman, Clinical Congress Comm.	General and Special	3 days	September	Lectures, Bedside Clinics, Symposiums and Discussions
			Dean Med. Sch.	General	Varies	Varies	Lectures, Bedside Clinics, Symposiums, Discussions and C. P. C.'s
	Various towns	St. Med. Soc. and St. Dept. of Health	Chairman, Pub. Health Comm., St. Med. Soc.	Obstetrics and Pediatrics	Varies	Varies	Lectures and Demonstrations
Illinois	Offered in 90 counties	St. Serv. Comm., St. Med. Soc.	Chairman and Secretary, St. Serv. Comm.	General	Varies	Varies	Lectures, Clinics and Symposiums
	Chicago and 11 Councilor Districts	St. Dept. Pub. Health, St. Med. Soc. and U. Ill. Coll. Med.	Chairman, Advisory Comm. to St. Dept. of Public Health	Obstetrics and Pediatrics	1 day bi-weekly or monthly 3 to 6 times Daily for 1 week repeated 7 times	October to April Summer	Lectures Lectures, Round Table Discussions, Clinics, Ward Walks, Manikin Demonstrations and Delivery Service
Indiana	Indianapolis	St. Med. Assn. and St. Univ. Med. Sch.	Chairman, Comm. on Grad. Med. Educ. of St. Med. Assn.	General	5 days	May and June	Lectures, Clinics, Demonstrations, Panel Discussions and C. P. C.'s
	54 cities and towns	St. Bd. of Health	Chief, Bureau Mat. and Child Health	Obstetrics, Pediatrics and others	Varies	Varies	Lectures and Demonstrations
	10 T. B. Sanat.	T. B. Assn.	Exec. Secretary	Tuberculosis	1 day	September to November	Clinics, Demonstrations and Round Table Discussions
Iowa	8 towns and Med. Coll.	St. Med. Soc. and St. Univ. Med. Coll.	Chairman, Speakers' Bureau, St. Med. Soc.	Choice from St. Soc. List	1 day a week or month, 5 to 8 times	Spring and Fall	Lectures and Clinics

## EDUCATION

## Extension Training in 23 of 24 States Visited to Date \*

Meeting Places	Instructors	Admission Requirements	Limitation of Classes	Registration Fee	Approximate Yearly Attendance	Miscellaneous Information
Varied	Out of state, in state and local M.D.'s	M.D.	No	No	680 (Annual Meeting)	Extension of graduate program projected to supplement training now being given; financed jointly by Med. Assn. and Dept. of Public Health
Hospital or Hall	Med. Sch. faculty members and in state and local M.D.'s	Co. Med. Soc. Membership	No	No	950	Budget for current year estimated at \$4,000; 300 physicians in state available as instructors
Hospital or Hall	1 out of state M.D., Med. Sch. faculty members and 11 in state M.D.'s	Co. Med. Soc. Membership	No	\$5	50	\$25 prize offered for best written review of course
Varied	In state M.D.'s	M.D.	No	No	...	
Hall	Out of state univ. prof.	Co. Med. Soc. Membership	No	No	..	Financed by State Dept. Pub. Health. Also series of 10 lectures on venereal diseases at U. Calif. Hosp. in San Francisco
Univ. Hosp.	Faculty members (22)	M.D.	No	\$20	40	Fee included meals and syllabus of lectures. State medical library with 2 sections offers package service to practicing physicians
Hospitals	Approximately 50 faculty members	M.D.	In Lab. and Ward Rounds 15 to 24	\$25	160	A physician may register for 1 morning and 1 afternoon course
Hosps. and Med. Schools	In state and local M.D.'s and faculty members	M.D.	Study groups from 5 to 10	\$10-15 (S. F.) \$2 (L. A.)	300	Fee includes cost of syllabus and membership in the Assn.
Med. College	Faculty membs. of 3 Med. Schs. give Fall Assemb. and 30 from Coll. Med. Evan. give Spring Clinics	M.D.	No	\$1.50	400-500	Exhibits, demonstrations and clinical pathologic conferences feature the Spring Clinics
Med. Sch.	Faculty members	M.D.	Yes	Varies	...	Opportunities for study in anatomy and other basic sciences
Hospitals, Med. Sch. and Hotel	Out of state, in state and local M.D.'s (Total approx. 40)	M.D.	No	\$2	245	St. Med. Soc. and St. Univ. Sch. of Med. jointly support. Denver Co. Med. Soc. and St. Med. Soc. maintain library for physicians in Denver
Hotel and Theater Auditoriums	Out of state M.D.'s (20)	M.D.	No	\$3	790	Next meeting (1939) to be held in Utah—subsequent meetings in other states
Hospitals	Out of state, in state and local M.D.'s (20)	M.D.	No	\$2	165	St. Med. Soc. and 4 local hospitals jointly support; Colo. St. Hosp. staff meets 1-4 times mo. for C. P. C.'s and reviews of neuropsychiatric exams. and treatment
Hotel	In state and local M.D.'s	M.D.	No	..	50	St. Med. Soc. jointly sponsors
Hospitals or Halls	In state M.D.'s	Co. Med. Soc. Membership	No	No	...	Instruction voluntary; handbook on diagnosis and treatment in preparation
Hospitals or Halls	In state and out of state univ. profs. (6)	M.D.	No	No**	115	Physicians in 11 counties in northern and northeastern Colorado enrolled
Univ. buildings and hospitals	In state and out of state M.D.'s and faculty members	M.D.	No	\$2	605	12 states represented; a permanent record system has been developed; 12 chairmen of symposiums in 1937
Univ. hosps.	Faculty members	M.D.	Yes	No	...	No formal p. g. courses; opportunities available for physicians of Conn.
Hospitals	In state and local M.D.'s	M.D.	No	No**	50	A monthly series of lectures on heart disease given in Fairfield Co. 1935
Co. Soc. choice	300 in state M.D.'s and univ. faculty members	Co. Med. Soc. Membership	No	No	..	Financed by St. Med. Soc.; teams of 3 to 6 M.D.'s available to any Co. Soc. on request
Co. Soc. choice	In state M.D.'s	M.D.	No	No**	..	Clinical instruction given in Chicago supplements short lecture courses arranged by field organizer, with Speakers' Bureau of St. Med. Soc. completing arrangements. A.M.A.'s Med. Libr. available to individual subscribers of A. M. A. publications; p. g. courses in urology and cardiovascular renal disease offered in Aug. and Sept. annually by Northwestern U. Med. Sch.
Research and Educational Hospital, Chicago	Faculty members of approved med. sebs.	M.D.	18 each wk's. class	\$10**	65	
Univ. Med. Sch. and Hotel	Out of state, in state and local M.D.'s (6 out of state M.D.'s)	M.D.	No	No	500	Financed jointly by Univ. and Med. Assn.; facilities of medical school, including package medical library available to physicians; 2 wk. intramural courses offered by Univ. Dept. Obs. during 9 mos. of yr. (resident facilities for physicians)
Varied	Out of state and in state M.D.'s	M.D.	No	No**	...	Speaker's program prepared by Bureau of Maternal and Child Health of St. Bd. of Health; dir. of p. g. obs. education conducts circuit courses in Dist. Med. Soc's.
Hospitals	Out of state and local M.D.'s	M.D.	Small groups	No	200	One week course in Indianapolis attended by 12 physicians and financed by T. B. Assn.
Hotels and St. Univ.	Out of state, in state and univ. M.D.'s (Choice by vote of registrants)	St. Med. Soc. Membership	No	\$5, \$10	450	Financed by St. Med. Soc.; state med. libraries at Des Moines and Iowa City with package medical service

GRADUATE MEDICAL  
Opportunities for Practicing Physicians to Engage in

State	Location of Course	Sponsoring Agencies	Director of Program	Subjects	Duration of Course	Time Given	Type of Instruction
Iowa (cont'd)	8 towns	St. Dept. Health and St. Med. Soc.	Chairman, Speakers' Bureau, St. Med. Soc.	Obstetrics and Pediatrics	1 day weekly 8 times	March, April and November (1937-38)	Lectures
Kansas	30 towns	St. Med. Soc. and St. Bd. of Health	Comms. of St. Med. Soc. and Secy., St. Bd. of Health	Obstetrics, Pediatrics, Syphilology, Cancer and T. B.	1 day weekly 4 times	June to September	Lectures
	Kansas City and Lawrence	St. Univ. Med. Sch.	Denn, Med. Sch.	General	3 days	Spring	Lectures, Clinics, Ward Walks
Kentucky	8 councillor districts (incl. Louisville)	St. Med. Assn.	Chairman, Comins. on Extension Course and P. G. Course in Dis. of Children	General and Pediatrics	Day and evening 1 day weekly 10 times	Varies April	Lectures
	Louisville	Jefferson Co. Med. Soc. and Univ. Louisville Sch. Med.	President, Co. Med. Soc.	Physiology and General	Twice monthly over 6 months	February to June	Lectures, Conferences and Clinics
		Univ. Louisville Sch. Med. Alumni Assn.	Dean, Med. Sch.	Obstetrics, Pediatrics, Surgery Chest Dis. and Psychiatry	3 days	June	Lectures and Demonstrations
Massachusetts	18 cities and towns	St. Med. Soc. and St. Dept. Pub. Health	Secretary, Exec. Comm. P. G. Instruc., St. Med. Soc.	Obstetrics, Therapeutics, Pneumonia, Scarlet Fever, Heart Dis., Rheumatic Fever, Syphilis, Gonorrhea, etc.	1 day weekly 8 to 10 times	January to May	Clinics, Ward Rounds and Group Discussions
	Boston	Harvard Univ. Med. Sch.	Asst. Dean, Courses for Graduates	General and Special	Varies	Varies	Various types
		New England Med. Center (Tufts Coll. Med. Sch.)	Director, Postgraduate Courses	Medicine, Pediatrics, Obstetrics, Gynecology and Special	1-4 weeks	Varies	Lectures, Clinics, Ward Rounds and Clinical Conferences
Michigan	Detroit, Ann Arbor and 12 other cities and towns	U. Mich. Med. Sch., Wayne U. Coll. Med. and St. Med. Soc.	Chairman, Advisory Comm. on P. G. Educ., St. Med. Soc.	General and Special	1 week and 4 to 8 weeks or longer	Spring and Summer	Preclinical and Clinical
	9 towns and cities	State Dept. of Health	Chairman, Adv. Comm. P. G. Educ. St. Med. Soc. and Dir., Bur. Mat. and Ch. Health, St. Dept. Health	General review of undergraduate curriculum	1 day weekly 8 times	Fall (series over 4 yrs.)	Clinical, with cases and informal discussions
Minnesota	Minneapolis	Dept. P. G. Educ. U. Minn.	Director	Obstetrics and Pediatrics	1 day weekly 6 times	Summer and Fall	Lectures
	6 towns	St. Med. Assn. and Univ. Ext. Div.	Director, Ext. Div.	Choice from list supplied	1 day weekly 8 times	Varies	Lectures, Seminars, Demonstrations, Clinics and Ward Experience
	Minneapolis and 6 towns	St. Dept. Health and St. Med. Assn.	Director, Div. Child Hygiene	Choice from St. Assn. and Univ. list	1 day weekly 4 to 6 times	May and June	Lectures, Clinics and Demonstrations
Mississippi	50 towns	Div. of Med. Ext. Tulane U. of La.	Dir. of Med. Ext. Tulane U. of La.	Obstetrics, Pediatrics and Syphilology	1 day weekly 5 to 10 times	Varies	Lectures, Clinics, Demonstrations and Consultations
	Jackson	Central Med. Soc.	Secretary	General	Day and evening	Sept. (1937) June (1938)	Lectures and Round Table Discussions
Missouri	26 counties and councillor districts	St. Med. Assn.	Chairman, P. G. Comm.	Appendicitis, Tumors, etc.	Day or evening	Varies	Lectures and Demonstrations
	41 cities and towns	St. Bd. Health and St. Med. Assn.	Director, Dept. of Child Hygiene, St. Bd. Health	Preventive Obstetrics and Pediatrics	1 day 2 times	Varies	Lectures and Demonstrations
	Kansas City	Jackson Co. Med. Soc.	Chairman, Comm. Med. Educ.	Preclinical and Clinical, Incl. physical and laboratory diagnosis	1 day weekly 4 to 20 times	Fall and Spring	Tumor Clinics, Lectures and Demonstrations
		Kansas City S. W. Clinical Soc.	Director of Clinics	General	2 and 4 days	Spring and Fall	Graduate Assembly
	St. Louis	St. Louis Clinics	Secretary, Board of Directors	General	6 days	May	Graduate Assembly
		Washington U. Sch. Med.	Chairman, Faculty Comm. on Grad. Instr.	Obstetrics-Gynecology, Heart Diseases	4 weeks 2 weeks 1 month	June and July May Summer	Lectures, Demonstrations, Clinics, Experience with Patients
		St. Louis U. Sch. Med.	Dean, Sch. of Med.	Surg. Anat., Phys. Diag., Clin. Microscopy	2 days	Spring	Lectures, Laboratory and Clinic
	St. Joseph	St. Joseph. Clin. Soc.	Secretary	General	1 day	Spring	Lectures
	Joplin	Jasper Co. Clin. Soc.	Secretary	General	1 day	Spring	Lectures
Nebraska	30 towns in 9 councillor districts	St. Med. Assn. and Dept. of Health	Chairman, Speakers' Bureau, St. Med. Assn.	Obstetrics and Pediatrics	3 to 16 days in each dist.	Throughout year	Lectures, Manikin Demonstrations and Movies

## EDUCATION—Continued

## Extension Training in 23 of 24 States Visited to Date \*

Meeting Places	Instructors	Admission Requirements	Limitation of Classes	Registration Fee	Approximate Yearly Attendance	Miscellaneous Information
Hotels, Hospitals and Schools	In state and univ. M.D.'s	M.D.	No	\$2**	345	St. Dept. of Health cooperates with T.B. Assn. in T.B. case finding studies and with St. Univ. in crippled children's program
Varied	Out of state and in state M.D.'s	M.D.	No	No**	855	St. U. Ext. Div. assisted in registering physicians for courses; annual meeting of St. Med. Soc. devoted in part to grad. instr., average attendance 750
Med. Sch. and Univ.	Out of state M.D. and faculty members	M.D.	75	No	75	Supervised clinical clerkships for 1 week projected
Available Auditoriums	In state M.D.'s	Co. Med. Soc. Membership	No	No	..	St. Bd. of Health, on request, furnishes programs on T.B., syphilis, pediatrics or obstetrics to county societies or councilor districts
Children's Free Hospital	11 local M.D.'s	M.D.	Yes	\$5	20	
Louisville City Hospital	Faculty members and local M.D.'s	Co. Med. Soc. Membership	No	No	160	Co. Soc. deposits books and periodicals and helps maintain Univ. Louisville Med. Sch. Library
Louisville City Hosp. and Univ. Clinics	Faculty members	M.D.	No	No	6	Two months postgraduate course for Negro physicians with supervised clinical experience in Univ. Clinics and wards; 8 accepted in medicine, pediatrics or obstetrics
Hospitals	56 M.D.'s of univ. faculties and in state M.D.'s	M.D.	No	No**	710	District medical societies choose subjects from list supplied; 5 divisional chairmen in charge of instruction; financed partly by St. Med. Soc.; Boston Med. Library is the home of Mass. Med. Soc.; library dues are \$15 per year
Med. Sch. and affiliated hospitals	Faculty members	M.D.	Yes	Yes (Varies with subject chosen)	..	Commonwealth Fund of New York subsidizes applicants approved on their merits for specially arranged courses
Med. Sch. and affiliated hospis. and clinics	Faculty members	St. Med. Assn. Membership	Yes	\$5	Varies	Bingham Associates Fund now offers fellowships to practicing physicians of Maine
Univ. hospitals and labs.	Faculty members	M.D.	Yes (Pre-clin. courses)	\$25 per mo. for special courses	485	Spring review courses of extramural fall instruction given; no fees; lecture notes published and available to registrants at \$1 per volume. Extramural courses accessible to majority of physicians in state. Out of state physicians may attend intramural courses given at Ann Arbor and Detroit; financed jointly by Univ. Mich., St. Med. Soc., St. Dept. of Health. At Detroit: Noonday Study Club weekly; annual 3 day lectures and cooperative programs with local hospitals sponsored by Wayne Co. Med. Soc.; County Society library maintained, in part, at Wayne Univ. Coll. Med.
Hospitals	Faculty members and in state M.D.'s (Approximately 75 instructors)	M.D.	No	No	1,805 (Total)	
Hospitals when available	In state M.D.'s	M.D.	No	No**	315	
Study center, Univ. controlled Wards and Clinics	Faculty members, in state and out of state M.D.'s	Co. Med. Soc. Membership	15 to 25 (Accommodations for 78)	\$25	200	350 faculty appointments for 16 weekly institutes; since started 412 M.D.'s registered; out of state physicians may attend; Commonwealth Fund aids
Hospitals when available	Faculty members and in state M.D.'s	M.D.	No	\$1 to \$5	200	Intramural night courses in prev. med., T.B., x-ray diag. and allergy given once weekly for 8 or 17 weeks; fees \$5 and \$10 respectively; 56 registered
Univ. Med. Sch. and Hotels	Faculty members and in state M.D.'s	M.D.	No	No**	325	35 faculty members conducted first series of lectures on University campus
Available halls	Univ. professors	M.D.	No	\$3 to \$5	620	Commonwealth Fund, St. Med. Assn., St. Bd. Health jointly finance; Miss. Hosp. Assn. also cooperates; a field organizer and field clinicians are engaged
Hotel	Univ. faculty	M.D.	No	....	400	9 faculty members U. Tenn. Coll. Med. in 1937 and 15 from Tulane U. Sch. Med. in 1938 participated in meetings. Med. libr. serv. by St. Bd. Health, Jackson
Hospitals or Halls	Faculty members and in state M.D.'s	St. Med. Assn. Membership	No	No	....	County societies may request speakers on any subject—usually those of current interest chosen; financed by St. Med. Assn.
Hospitals or Halls	Full time univ. profs.	M.D.	No	No**	560 (1936-7)	Program to continue until physicians in all sections of state offered courses
Kansas City General Hosp.	Co. Soc. members (19)	M.D.	No	\$2 to \$10	Not yet available	County Medical Society maintains medical library in Kansas City General Hospital; course in psychoanalysis and 4 medical speakers clinic also included
Municipal Auditorium	Out of state and local M.D.'s	M.D.	No	\$5	300 and 1,000	Exhibits aid in financing; Kansas City Medical Journal publishes papers read annually; 250 M.D.'s are society members
Med. Schs. and Halls	Local M.D.'s	M.D.	No	\$10	205	141 members of Clinical Society conduct the clinics
Univ. Clinics and Hospitals	Faculty members	M.D.	25 15	\$100 \$50	...	Registrar accepts applications accompanied by \$10 registration fees
St. Mary's Infirmary	Med. Sch. faculty	M.D. (Negro)	50	No	50	Arrangements for informal instruction may be made on request to Dean, Med. Sch.
.....	.....	M.D.	.....	No	....	
.....	.....	M.D.	.....	.....	....	
Varied	Out of state and in state M.D.'s	M.D.	No	No**	....	St. Med. Assn.'s Central Advisory Comm. now correlates all grad. activities in state; 100 Nebraska physicians available for teaching; St. Dept. of Health cooperates



# GRADUATE MEDICAL Opportunities for Practicing Physicians to Engage in

State	Location of Course	Sponsoring Agencies	Director of Program	Subjects	Duration of Course	Time Given	Type of Instruction
Nebraska (cont'd)	Omaha	Omaha Mid-West Clinical Soc.	Director	General	5 days	October	Lectures, Clinical Conferences, Discussions and Exhibits
		St. Dept. Health and St. Med. Assn.	Director, Div. Mat. and Child Health, St. Dept. of Health	Obstetrics, Gynecology, Pediatrics	2 weeks	July	Lectures, Clinics and Lab. Demonstrations
New Jersey	11 towns	St. Med. Soc. and Ext. Div. Rutgers Univ.	Chairman, Comm. on P. G. Educ., St. Soc.	Co. Society's own choice	1 day weekly 6 times	Spring	Lectures
	4 towns	St. Health Dept. and St. Med. Soc.	Exec. Secretary, St. Med. Soc.	Preventive Pediatrics	1 day weekly	Spring	Lectures
	Newark	St. Med. Soc., Essex Cn. Soc., Newark Hosps.	Chairman, Clin. Conference	General	2 days	October	Demonstrations and Clinics
New York (state only—excluding metropolitan areas)	41 cities and towns	St. Med. Soc.	Chairman, Comm. on Med. Educ.	General and Obstetrics	1 day weekly 5 to 8 times	Varies	Lectures, Clinics and Demonstrations
	Onondaga, Erie, Monroe and other counties	St. Med. Soc. and Hospitals or Med. Schools	Secretary, Local Co. Med. Soc.	Exams. of Blood, Nervous System, Arms and Rectum	3 to 4 2 hour sessions a week	Varies	Practical Experience with Patients
	48 counties	St. Dept. Health and St. Med. Soc.	Chairman, Comm. on Med. Educ., St. Med. Soc.	Pneumonia	1 day	Varies (1936 to 1938)	Lectures, Clinics, Demonstrations and Conferences
New York (metropolitan areas)	Buffalo	Buffalo Med. Sch., City, Children's and Gen. Hospitals	Chairman, Comm. on P. G. Courses, Med. Sch.	General	2 weeks	September	Practical Clinical Work
	Brooklyn	Med. Soc. Co. Kings and Long Island Coll. Med.	Chairman, Joint Comm. on P. G. Educ.	General and Special	1 day weekly 8 times; 4-10 hrs. wk. for 1-6 mos.	Spring and Fall	Bedside Instruction, Clinics and Lectures
	County of New York	N. Y. Acad. Med. also cooperating with:	Chairman, Comm. on Med. Educ., Acad. Med.	General (Symposium)	2 weeks	Fall	Graduate Assembly with Clinics and Demonstrations
		Med. Soc. Co. New York		General (Friday afternoon series)	1 day weekly 20 times	Winter and Spring	Lectures
		N. Y. Heart Assn.		Obstetrics	1 day weekly 8 times	Spring	Lectures
				Heart Disease	1 day every 1 to 2 wks. 12 times	Winter and Spring	Lectures
		Commissioner of Health, N. Y. C.		Syphilology	1 day weekly 7 times	February and March	Lectures and Demonstrations
		N. Y. Diabetes Assn.		Diabetes Mellitus	1 day weekly 6 times	January and February	Lectures
	County of Queens	Med. Soc. Co. of Queens	Chairman, Comm. on Grad. Educ.	General	Twice monthly 15 times	Throughout year	Lectures
	Greater New York	N. Y. O. Dept. of Health and 5 Co. Med. Soces.	Chairman, Subcomm. Professional Educ., Dept. Health	Pneumonia	½ day (22 places)	Spring	Lectures, Clinics and Demonstrations
	New York City	Dept. of Health	Director, Bureau of Social Hygiene	Syphilis and Gonorrhea	3 to 6 mos.	Throughout year	Clin. and Lab. Training, Treatment Experience
		Columbia U. Coll. of Phys. & Surg.	Director, N. Y. P.-G. Med. Sch. and Hosp.	General and Special	1 to 2 weeks and longer periods	Throughout year	Clin. and Lab. Training and Treatment Exper. in Outpatient Clinics chiefly
		New York U. Coll. of Med.	Dean, Coll. of Med.	General and Special	Varies	Varies	Varies
		New York Polytechnic Med. Sch. and Hosp.	Medical Executive Officer	General and Special	2 weeks to 9 months	Throughout year	Lectures, Demonstrations, Clinics, Laboratory Training
North Carolina	5 cities and towns	Med. Sch. and Ext. Div., U. N. Car.	Chairman, Central Organization Comm.	General (choice of local comm.)	1 day weekly 7 times	Spring and Fall	Lectures and Clinics
	Banner Elk	St. Med. Soc.	Chairman, Comm. on P. G. Study	General	2 days	August	Lectures and Clinics
	Durham	Duke U. Med. Sch.	Dean, Med. Sch.	Gynecology, Obstetrics and Pediatrics	3 days	October	Graduate Symposium; Lectures, Clinics, Bed-side Instruction
	Wake Forest	Wake Forest Coll. Sch. Med. Science	Chairman, Comm. on Cancer, St. Med. Soc.	Tumors	2 days	April (1934 and 1935)	Symposium and Clinic
	11 cities and towns	St. Bd. Health and St. Med. Soc.	Director, Div. Prev. Med., St. Bd. Health	Obstetrics	1 day weekly 5 times	Fall and Spring (1935-6)	Lectures
Rhode Island	Saluda	So. Pediat. Seminar	Secretary	Pediatrics	3 weeks	Summer	Lectures and Clinics
	Providence and 3 towns	St. Dept. Pub. Health	Chief, Bureau of Child Hygiene	Obstetrics and Pediatrics	1 day weekly 5 times	Summer and Winter	Lectures and Demonstrations
South Carolina	20 cities and towns	St. Bd. of Health	Director, Div. of Child and Maternal Hygiene	Obstetrics	1 day weekly 6 times	Summer and Fall	Lectures, Round Table Discussions and Clinics
	Anderson	Piedmont P. G. Clinical Assembly	President, Clinical Assembly	Medicine, Pediatrics, Surgery	3 days	September	Lectures

## EDUCATION—Continued

## Extension Training in 23 of 24 States Visited to Date \*

Meeting Places	Instructors	Admission Requirements	Limitation of Classes	Registration Fee	Approximate Yearly Attendance	Miscellaneous Information
Hotel	Out of state and local M.D.'s	M.D.	No	\$5	670	125 local M.D.'s are society members, many being on faculties of the two local medical schools. Med. libr. serv. for physicians maintained at U. Nebraska
U. Nebr. and St. Joseph Creighton Mem'l Hospital	21 members of 2 Med. Sch. faculties	M.D.	10	No**	....	Includes round table discussions and mimeographed copies of lectures and demonstrations; 2 courses each year; T. B. case finding study with educational features in 5 cos.
Varied	Out of state univ. profs.	Co. Med. Soc. Membership	No (for 25 or more)	\$10	385	C.P.C.'s in Newark City Hosp., average attendance 100 M.D.'s; T.B. institutes yearly in Hudson Co. and occasionally elsewhere
Varied	Out of state and in state M.D.'s	M.D.	No	No**	500	Health Dept.'s field physicians offer informal instruction to practicing physicians
Hospitals	Hospital staffs	M.D.	No	No	Not yet available	Annual Clinical Conference
Hospitals and Halls	Med. Sch. faculty and in state M.D.'s	M.D.	No	No	2,000	St. Med. Soc. appropriated \$5,000 for grad. med. ed. during 1937-38; 5 obstetric courses financed by St. Dept. of Health
Hospitals or Med. Schools	Med. Sch. faculty or hospital staff members	M.D.	Groups of 4 to 6 each	Varies	....	Personal instruction in EKG and other subjects given at Syracuse, small groups instructed by professional teacher
Hospitals, Med. Schools or Halls	Med. Sch. faculty or hospital staff members	M.D.	Yes (Institutes)	No	375 (at Med. Centers)	Financed by St. Dept. Health which reimbursed registrants' travel and hotel expenses to medical center for 1 day "Institutes"; estimated 5,400 attended over 2½ yrs. throughout the state
Med. School and Hospitals	55 faculty and guest M.D.'s	M.D.	Groups of 5 each	\$50	55	Medical school allots \$1,500 annually; library facilities open to physicians
Med. Soc. Audit., Med. Coll. Hosp. and Local Hosps.	Med. Coll. faculty and in state M.D.'s	M.D.	Short courses not limited; intensive long courses limited	\$0 to \$10 and \$20-\$100	175	Med. Soc. and Acad. Med. Library maintained for local physicians; Friday afternoon lectures on general subjects at Co. Med. Soc. building 1 day weekly for 20 times; special courses available at L. I. Coll. of Med.
Academy Bldg. and 18 hosps.	Out of state and in state M.D.'s	M.D.	No	\$3	500-800	Members demonstrate scientific exhibit; two thirds of registrants from Greater N. Y.; 17 states represented; all other Acad. activities without charge. Acad. cooperates with many medical and health agencies concerned with medical education in New York City
Academy Auditorium	Out of state and in state M.D.'s	M.D.	No	No	300	Thursday afternoons
Academy Auditorium	In state M.D.'s	M.D.	No	No	200	Includes round table discussions
Hosps., Med. Schs., Academy Auditorium	In state M.D.'s	M.D.	No	No	150-200	
Acad. Audit., Hosp., Health Dept. and Med. Seb. Clinics	In state M.D.'s	M.D.	No	No	95	Clinics held 2 days a week in 13 places, attended by 1 to 10 physicians in each clinic in 4 boroughs
Academy Auditorium	In state M.D.'s	M.D.	No	No	235	All lectures open to medical students; library of Acad. open to public, 60% of patrons being M.D.'s
Co. Soc. Audit.	Out of county M.D.'s	Co. Med. Soc. Membership	No	No	160	Course in public speaking, 1 night week Oct.-Dec. 1938, fee \$35; course in med. Italian, 3-4 p. m., 1 day week beginning 7/6/38, no fees; symposium on dermatology 11/14-17/38 for Co. Soc. members; medical library maintained in County Medical Society building
Metropolitan Hospitals	In state M.D.'s	M.D.	20-50	No	1,100	Co. Med. Soc. secretaries acted as registrars; hosp. comms. aided with local arrangements
Facilities of City Health Dept.	Local M.D.'s	M.D.	8	No**	60	Cooperative project with U. S. Public Health Service
Affiliated Institutes and Hospitals	Faculty members	M.D.	Yes	\$12-\$400	465 (Fig. for 1936-7)	See: Postgrad. Med. School's annual announcement for further details
Affil. Hosps.	Faculty members	M.D.	Yes	Varies	140 (Fig. for 1937-8)	Course in syphilology, Feb.-June, in coop. with U. S. Pub. Health Serv. and St. Dept. Health; 16 physicians registered in 1938; see: bull. for grad. and p. g. opportunities
Clinics and Hospital	Faculty members	M.D.	Yes	Varies	160 (Fig. for 1936-7)	See: Polyclinic Med. School's annual announcement for further details
Hotels and Halls	Out of state M.D.'s	M.D.	No	\$15	350	Lectures projected for rural areas with financial aid of medical and health agencies of North Carolina
Hotel and Hospital	Out of state and local M.D.'s	St. Med. Soc. Membership	No	No	....	St. Soc. P. G. Comm. cooperates with other agencies in state active in graduate education
Univ. and Hospital	Out of state M.D.'s and faculty members	M.D.	No	No	600 (Grad. sympos.)	Resident facilities offered prac. phys. at med. sch. for 1 to 2 wks. throughout year, limited to 2 phys.; fee \$10 wk. inc. board and room
Med. Sch.	Out of state M.D.'s	M.D.	No	No	125	Previous symposiums on tumors held at Wake Forest in 1934; financed by St. Med. Soc.
Hospitals and Halls	Out of state M.D.'s	M.D.	No	No**	430	Similar course in pediatrics is projected
Hospitals	Out of state and in state M.D.'s	M.D.	No	....	....	Seminar held yearly, using facilities of two local pediatric hospitals
St. Joseph's and Providence Lying-In Hosps.	In state M.D.'s	M.D.	No	No**	115	Providence hospitals' facilities used for C.P.C.'s, attended by 150 M.D.'s twice monthly, and for annual meetings of St. Med. Soc.; St. Med. Soc. Libr. maintained in St. Soc. building
Hotels and Halls	Univ. prof.	M.D.	No	No**	....	Courses recently organized; all data concerning it are not available; St. Med. Assn. developing med. libr. at Sonoma
Hospital	Out of state, in state and local M.D.'s	M.D.	No	\$2	160	Med. Coll. St. So. Car. and St. Med. Assn. jointly aid in this graduate assembly

GRADUATE MEDICAL  
Opportunities for Practicing Physicians to Engage in

State	Location of Course	Sponsoring Agencies	Director of Program	Subjects	Duration of Course	Time Given	Type of Instruction
Tennessee	9 circuits covering state	St. Med. Assn.	Chairman, Comm. on P. G. Instr. in Obs.	Obstetrics (others projected)	1 day weekly 10 times	Varies	Lectures, Demonstrations and Clinics
	Nashville	Vanderbilt U. Sch. Med.	Director, P. G. Instr.	Clin. and Lab. Diag., Med., Surg., Obs. and Ped.	4 months	May to September	Laboratory and Clinical Training
		Meharry Med. Coll.	President of Coll.	General	2 weeks	May, June	Discussions, Symposiums and Clinical Training
		Nashville P. G. Med. Assn.	Secretary	General	2 weeks	May, June	Lectures and Clinical Training
	Memphis	Mid. So. P. G. Med. Assembly	Secretary-Treasurer	General	4 days	February	Lectures, Exhibits and Round Table Discussions
	Knoxville	Tenn. Valley P. G. Med. Assembly	Secretary-Treasurer	General	3 days	June	Lectures, Exhibits and Round Table Discussions
	Middle Tennessee	Middle Tennessee Med. Assn.	Secretary-Treasurer	General	2 days	Semiannual	Lectures and Discussions
	East Tennessee	East Tennessee Med. Assn.	Secretary-Treasurer	General	2 days	Semiannual	Lectures and Discussions
	Varies	State Med. Assn.	Secretary-Editor	General	3 days	April	Lectures and Demonstrations
	Redboiling Springs	Upper Cumberland Med. Soc.	Secretary-Treasurer	General	2 days	June	Lectures and Demonstrations
Utah	West Tennessee	West Tenn. Med. and Surg. Assn.	Secretary-Treasurer	General	1 day	May	Lectures and Discussions
	Salt Lake City	St. Med. Assn. and St. Bd. of Health	Director, Div. of Mat. Ch. Health, Bd. Health	Obstetrics and Pediatrics	2 days	September (1937)	Lectures
Wisconsin	15 cities and towns	St. Bd. of Health	Director, Div. of Mat. and Child Health	Pediatrics	2 or more days	June-August	Lectures, Demonstrations and Conferences
	Madison and Milwaukee	St. Med. Soc. and 2 Med. Schs.	Chairman, Comm. Sel. Work, St. Med. Soc.	General	3 days	September	Symposiums, Round Table Discussions and Lectures
	45 towns	St. Bd. of Health and St. Med. Soc.	Chief, Bur. Mat. and Ch. Health	Obstetrics and Pediatrics	1 day weekly 5 to 6 times	April to September	Lectures and Discussions
	Milwaukee	Med. Soc. of Milwaukee Co.	Chairman, Comm. on P. G. Instruction	General	Varies	Varies	Lectures, Clinics and Demonstrations

\* No organized training in Nevada; data on formal instruction in metropolitan areas not complete.  
 \*\* Federal financing.

(Continued from page 801)

have aided materially in organizing field courses in eight states. Private and public hospitals have contributed their facilities in nineteen states, and medical schools have provided faculty, space and equipment in nineteen states.

Each state visited seemed to have a different manner of organizing and administering instruction for its own physicians. These differences seemed to be predicated on differing local and community conditions. Such factors as the proximity to medical centers, the proportion of rural and urban communities, the development of highways, the climatic conditions, and the ability of physicians to leave their practices for sufficient time to continue professional training had to be considered.

#### METHODS OF INSTRUCTION

In twenty-three states, opportunities were offered physicians practicing outside of metropolitan areas to continue their professional training.<sup>2</sup> Ten states have utilized a field secretary or organizer to determine the educational needs of extrametropolitan physicians and to aid materially in meeting these needs. Extension training in smaller cities or towns consisted of lectures illustrated by slides or motion pictures, demonstrations of cases, case finding clinics, symposiums with complete consideration of one subject and/or round table discussions.

Circuits of from five to six towns were sometimes chosen as training centers where each town was visited weekly from four to ten times. This was the method employed in ten states. One physician or a team of physicians would spend from one to two months in the

region of the circuit and then move on to a new area. This procedure requires permanent personnel, at least for the period of the course.

Another manner of offering instruction to extrametropolitan physicians, which is being used more frequently today, was the provision of prominent out of state or in state physicians for one or more meetings at fixed teaching centers as part of a continuous, planned, scientific and clinical program. Under this system physicians within convenient distances of the courses are offered the educational advantages of various medical centers brought to the vicinity of their practice. While local facilities may limit the kind of training offered, illustrated lectures, clinics, demonstrations, discussion groups, symposiums and clinical pathologic conferences have been undertaken with success. Hospitals usually offered the best facilities, but hotels have been used extensively, and halls in other buildings sometimes provided the only meeting places available.

Thirty-seven metropolitan centers provided graduate activities in seventeen of the states visited. Seventeen of these were sponsored alone or jointly by component medical societies, fourteen by sectional organizations, twenty-five by medical or graduate schools, four by academies of medicine and seven by tuberculosis, heart, diabetes or other health organizations. In forty-six graduate programs the training was largely didactic. In twenty cities practicing physicians were offered opportunities to obtain individual instruction in small groups so that additional clinical experience might be had under supervision. At these centers bedside training was emphasized, the undergraduate facilities of medical schools and of hospitals being opened during one to three week periods. The equivalent of short

2. See table.

## EDUCATION—Continued

## Extension Training in 23 of 24 States Visited to Date \*

Meeting Places	Instructors	Admission Requirements	Limitation of Classes	Registration Fee	Approximate Yearly Attendance	Miscellaneous Information
Hospitals when possible	Out of state univ. prof.	M.D.	No	\$5	900	Commonwealth Fund, Vanderbilt U., U. Tenn. and St. Dept. Pub. Health jointly finance; offices at U. Tenn. Med. Coll. with secretary, field clinician and field organizer
Med. Sch.	Faculty members (20)	M.D.	20	\$150 plus Lab. fee	20	Commonwealth Fund approves applicants on their merits; other courses in preventive med., syphilis and gen. clin. subjects available; pkg. med. libr. serv.
Med. Sch.	Faculty members and guests	M.D.	20 (Negro physicians)	\$10	20	Fellowships—1 to 2 each year for Negro physicians, offered by Educ. and Research Boards
Nashville General Hospital	65 members and guests	M.D.	10 (Clin. Groups)	\$10	30	Personal instruction 12 hours daily with clinical experience on obstetric cases under supervision
Hotels	Out of state M.D.'s	St. Med. Soc. Membership	No	\$5	1,250 (660 M.D.'s)	A general review of recent advances in medicine and the specialties
Hotel	Out of state and in state M.D.'s	St. Med. Soc. Membership	No	\$1	350	A general survey of recent advances in medicine and the specialties
Hall	In state M.D.'s	M.D.	No	\$3	125	A general survey of recent advances in medicine and the specialties
Hotel	Guests and Members	M.D.	No	\$2	250	A general survey of recent advances in medicine and the specialties
Hotel	Guests and Members	St. Med. Assn. Membership	No	No	700	Exhibits, scientific and commercial; group meetings for specialists
Hotel	Guests and Members	M.D.	No	\$2	150	A general survey of recent advances in medicine
Hotel	Guests and Members	M.D.	No	\$2	150	Recent advances in medicine; round table discussion
Univ. Library	Out of state M.D.'s	M.D.	No	No**	175	Physicians from all but 4 counties of state registered
Hospitals and Halls	Out of state M.D.	M.D.	No	No**	....	Course operating now—all data not available; Salt Lake Co. Med. Soc. deposits books and periodicals in library U. Utah and aids in its maintenance
Hotels	Out of state, in state and local M.D.'s	St. Med. Soc. Membership	20 (Discussion Groups)	....	1,300	St. Med. Soc. finances; coun. dist. symposiums available on request to St. Soc.; package med. library service at State University
Varied	Med. Sch. faculty	M.D.	No	No**	650	Dept. Pub. Instr. sponsored crippled children graduate programs in 1936
Marquette Univ. Sch. Med. and Halls	Out of state and faculty members	Co. Med. Soc. Membership	No	Varies	250	Also cooperates with Wise. Anti-T.B. Assn. and other local scientific groups

term residencies were provided in seventeen medical schools and were projected in two others. In eight states the annual program of the state medical association was devoted substantially to graduate medical instruction and in several others in part to such instruction.<sup>3</sup>

## COURSES OFFERED PHYSICIANS

Instruction offered covered the whole field of clinical medicine and several of the basic sciences. Much interest has been shown in subjects in which recent advances have been made. These included therapeutics, preventive medicine, pneumonia, cancer and syphilis. There was special interest also in subjects in which a practical application of the training might follow. Examples of the latter included obstetrics and pediatrics, general medicine, especially cardiac disease and cardiovascular-renal disease, gastro-enterology and proctology, diabetes, allergy, thyroid disease, tuberculosis, common fevers and communicable diseases. Courses in general surgery, especially in traumatic surgery, minor and emergency surgery, neurosurgery, urology and urologic procedures, anesthesia and varicose veins were especially desired. In gynecology, instruction in endocrine therapy was in considerable demand. In the basic sciences pharmacology, pathology and neuropathology, clinical laboratory procedures, surgical anatomy, neuro-anatomy and physiology were

frequently taught. There seemed to be a conscious effort to avoid the implication that review courses offered practicing physicians were in any way preparatory to specialization.

## PHYSICIANS' INTEREST IN TRAINING

Twelve state committees on graduate education have executive officers with fairly accurate records of attendance. In these states approximately 25 per cent of the practicing physicians engaged in some form of graduate instruction over a year's period. Permanent record systems were being developed in some states. Several records indicated that physicians once enrolled for graduate training returned for additional instruction. In one state 80 per cent of the profession had registered for courses sometime during eight years; half of the physicians enrolled two or more times. In another, two thirds of the registrants of one year returned the next year for continuation of their education.

It has been observed also that when graduate work has once been established in an active county medical society it becomes a permanent annual affair. In some states dormant component societies have been revived by the stimulating experiences of extension courses given by prominent guest physicians who appreciated and attempted to meet the demands of physicians practicing in extrametropolitan areas.

The success of such programs seemed dependent on the sustained interest and activity of component medical societies. With few exceptions it may be said that the most practical educational projects encountered thus far have been found in active, progressive and well organized medical societies. This was especially true in rural communities. Moreover, especially fine sectional meetings have been developed by several metropolitan medical societies during the past five years, and for

3. See Graduate Medical Education, Progress Reports of the Field Study on Graduate Medical Education in the United States Being Conducted by the Council on Medical Education and Hospitals, Organization Section of THE JOURNAL; Alabama, May 14, 1938, p. 207B; Connecticut, June 18, p. 241B; Illinois, April 16, p. 186B; Indiana, February 19, p. 114B; Iowa, January 22, p. 40B; Kansas, April 23, p. 193B; Kentucky, May 21, p. 218B; Michigan, February 5, p. 73B; Minnesota, March 5, p. 136B; Mississippi, May 28, p. 226B; Missouri, April 30, p. 200B; Nebraska, April 9, p. 180B; New Jersey, March 19, p. 159B; New York (excluding metropolitan areas), June 11, p. 233B; Wisconsin, January 29, p. 54B; New York (metropolitan areas), volume 111, August 6, p. 542; Tennessee, August 20, p. 725.

more than fifty years sectional organizations in the South have devoted their efforts to continuing the training of physicians.

The success of extension programs in several states seemed dependent on the personal enthusiasm and energy of one or of a few physicians who, at considerable sacrifice to their vocation, were carrying a major share of the responsibilities connected with their state's educational activities.

#### FINANCING GRADUATE PROGRAMS

In nine states with extension programs of five or more years' duration the annual cost per graduate physician has varied from \$1.39 to \$15. In six of these states the registrants were required to pay fees; three state medical associations had no provisions in their budgets for continuing medical education. Five of the nine states received some federal support for professional training. Four of seven other states with permanent programs had no fixed budget allowances for graduate instruction.

Courses were given by instructors without compensation, except for travel expenses, in nineteen states. Oftentimes it was necessary that small fees be charged in order that announcements, registration, travel expenses of instructors and facilities might be financed. Except for federal funds, which have been used over the past three years, and private educational funds, which have been utilized less frequently, there seemed to be little provision for supporting courses except by registration fees and income from exhibits at graduate assemblies. Unfortunately, instruction given on a voluntary basis sometimes was not enthusiastically received, especially when registration fees were not charged.

In forty-eight of the extension courses reviewed thus far, physicians paid registration fees and component medical societies had provided budgets for graduate instruction in fifteen. Five medical schools contributed set amounts to cooperative programs, and the facilities and facilities of medical schools and private and public hospitals were used freely and frequently. Health departments supported thirty-one courses, and in at least twenty-three programs federal funds were utilized.

The more expensive graduate programs employed full time personnel to organize and register graduate physicians and to give them instruction on the circuit plan, employing field clinicians. Less expensive was the use of fixed teaching centers in extrametropolitan towns situated within convenient distances of practicing physicians and of instructors. This method of extension training seemed adaptable to several sections of this

country. Still less costly from an administrative standpoint were graduate assemblies in metropolitan areas. When bedside instruction of small groups of physicians was attempted, additional charges were sometimes necessary.

Opportunities for graduate study in twenty-three states are listed in the table.

#### COMMENT

Representative state association committees on medical education have proved helpful in correlating graduate courses for physicians in several states. Extrametropolitan physicians respond to organized programs and show greater interest in maintaining standards of practice than is generally appreciated. In this connection, it is noteworthy that courses in obstetrics and pediatrics were most frequently desired. Records show that in twelve states one of every four physicians engaged in some form of continuation study during one year. This interest is not limited geographically. Instruction is largely voluntary, which accounts for the relatively low registration fees charged. Recently federal funds have been provided for professional training in several states, supplementing some of the permanent programs which exist in two thirds of the states visited. Educational activities of component medical societies should be further encouraged, with the continued cooperation of academies of medicine, district societies, medical schools, extension divisions of universities, departments of health, hospitals and other interested organizations.

A significant development of residency facilities for practicing physicians, patterned similar to the plans which have operated continuously in Buffalo and Brooklyn since 1921 and 1922, is evident throughout the country. One, two week or longer periods of bedside instruction of limited groups with provision in medical schools and in hospitals for board and/or lodging and intimate instructor-graduate student relationships characterize these short term residencies. Such facilities are now available or projected in San Francisco; Chicago; Indianapolis; Kansas City, Kansas; Louisville, Kentucky; Boston; Detroit; Ann Arbor, Michigan; Minneapolis; Kansas City, Missouri; St. Louis; Omaha; Brooklyn; Buffalo; New York City; Rochester, New York; Syracuse, New York; Durham, North Carolina; Saluda, North Carolina, and Nashville, Tennessee. Thus, practicing physicians of thirteen states are provided opportunities for intramural training in courses designed especially for them.

## ESSENTIALS OF AN ACCEPTABLE MEDICAL SCHOOL

(Revised to June 1938)

### I. ORGANIZATION

A medical school should be incorporated as a nonprofit institution. Its board of trustees should be composed of public spirited men or women having no financial interest in the operations of the school or its associated hospitals. The trustees should serve for fairly long and overlapping terms. If the choice of trustees is vested in any other body than the board itself, that fact should be clearly stated. Officers and faculty of the school should be appointed by the board.

### II. ADMINISTRATION

There should be careful and intelligent supervision of the entire school by the dean or other executive officer who, by training and experience, is fitted to interpret the prevailing

standards in medical education and who is clothed with sufficient authority to carry them into effect.

There should be a good system of records showing conveniently and in detail the credentials, attendance, grades and accounts of the students, by means of which an exact knowledge can be obtained regarding each student's work. Records should also be kept showing readily the attendance of students at the teaching hospitals and dispensaries and the maternity and post-mortem cases attended.

The school should require that students be in actual attendance within the first week of each annual session and thereafter. Except for good cause, such as for illness, no credit should be given for any course when the attendance has been less than 80 per cent of the full time.



The school should issue, at least annually, a bulletin setting forth the character of the work which it offers. Such announcement should contain a list of the members of the faculty with their respective qualifications. The courses available should be set forth by departments (anatomy, physiology and so on) showing for each course its number, subject, content, character (lecture, recitation, laboratory or clinic), length of time, when, where and by whom given, and the amount of credit allowed. Information should be given regarding entrance requirements and tuition fees. The names of the students enrolled during the current or previous sessions should also be included.

The number of students to whom an adequate medical education can be given by a college is related approximately to the laboratory and hospital facilities available and to the size and qualifications of the teaching staff. A close personal contact between students and members of the teaching staff results in an efficiency which is not possible in an institution where the number of students is excessive.

Advanced standing may be granted to students for work done in other acceptable medical schools, and in granting advanced standing there should be no discrimination against the school's full course students. Official verification of the student's previous medical work should be obtained by direct correspondence with the school from which he comes, and his preliminary qualifications should also be verified and recorded the same as for freshmen students.

The admission of students to the medical school must be in the hands of a responsible committee or examiner, whose records shall always be open for inspection. Documentary evidence of the student's preliminary education should be obtained and kept on file. When the medical school is an integral part of the university, this work usually devolves on the university examiner. Unless the university examiner and his records are closely accessible, however, some officer at the medical school should obtain and keep on file each student's academic records.

### III. FACULTY

The school should have a competent teaching staff, graded and organized by departments. Appointments should be based on thorough training, successful teaching experience, ability in research, and willingness to pursue an academic career. In the clinical departments this does not exclude men who are in the active practice of medicine and surgery. Nominations for faculty positions should originate in the faculty, usually being made by the dean in consultation with the department heads or a committee of the faculty. Reasonable security of tenure must be assured in order that the personnel of the faculty may have adequate stability. In the preclinical sciences the faculty should include at least ten qualified persons of professorial rank,<sup>1</sup> devoting their entire time to teaching and to that research without which they cannot well keep up with the rapid progress of medical science. For each twenty-five students in a class there should be at least one full time assistant in each of the preclinical departments. Salaries should be sufficient to enable members of the faculty to support themselves and their families without the necessity of devoting time and energy to other occupations.

### IV. PLANT

The school should own, or enjoy the assured use of, modern fireproof buildings sufficient in size to provide lecture rooms, class laboratories, small laboratories for the members of the teaching staff and advanced students, administrative offices and a medical library. Equipment should be adequate, both for student use and for research. A trained librarian should be employed to supervise the operation and development of the library, which should include the more modern text and reference books with the *Quarterly Cumulative Index Medicus*, the *Index Catalogue of the Library of the Surgeon-General's Office* and serviceable card indexes. The library should receive regularly the leading medical periodicals, the current numbers of which should be readily accessible. These periodicals should be bound without delay.

1. Professorial rank as here used includes professors, associate professors and assistant professors.

There should be provision for the collection, preservation and indexing of anatomic, embryologic, pathologic and other specimens. With each pathologic specimen coming from post mortems there should also be kept the record of the postmortem, the clinical history of the patient on whom the necropsy was held, and microscopic slides showing the minute structure of the disease shown in the gross specimen. The museum furnishes an excellent means of correlating the work of the department of pathology with that of the clinical departments.

There should be sufficient dissecting material to enable each student to dissect at least the lateral half of the human cadaver, to provide cross sections and other material for study and demonstration.

For experimental laboratory work, as well as for medical research, a supply of animals is essential. Proper provision is necessary also for the housing and care of such animals. In any use made of animals every precaution should be taken to prevent suffering, and work by students should be carefully supervised.

Each school should have such useful auxiliary apparatus as stereopticons, reflectoscopes, microprojectors, carefully prepared charts, embryologic or other models, manikins, dummies for use in bandaging, x-ray apparatus, and other aids to effective teaching.

### V. CLINICAL FACILITIES

The school may own or control a general hospital. By control is meant the unquestioned right to appoint the attending staff. In this event the students come into close and extended contact with patients under adequate supervision. In the event that a medical school depends for clinical teaching on an independent hospital, it is essential that the clinical teachers, either on nomination by the school or by agreement in conference between school and hospital, be appointed by the hospital trustees to appropriate positions on the hospital staff. Such hospitals should be in close proximity to the school and have a daily average of not less than 200 patients who can be utilized for clinical teaching, these patients to be of such character as to permit the students to see and study the common variety of surgical and medical cases as well as a fair number in each of the so-called specialties. In the use of this material, bedside and ward clinics should be developed for sections of from five to ten students, and patients in medicine, surgery and the specialties should be assigned to each student under a well supervised clinical clerk system. The treatment and care of these patients should be particularly observed and recorded by the student under the strict supervision of the intern, the resident or the attending staff of the hospital. The use of existing municipal or state hospitals for teaching purposes is also advised.

The school should also own or control ample hospital facilities for children's contagious and nervous and mental diseases.

The school should own or control a well ordered dispensary or outpatient department with a daily average attendance of at least 100 patients (visits). Good histories and records of the patients should be kept and the material used in medical instruction. The attending staff should be drawn largely from the faculty, including those of highest rank.

At least fifteen maternity cases should be provided for each senior student, who should have actual charge of these cases under the supervision of the clinical instructor. A carefully prepared report of each case should be handed in by the student.

Facilities should be provided for at least fifty necropsies during each school session which are attended and participated in by students. These should be performed by the professor of pathology or a member of his staff. The material thus secured should be used in connection with clinical pathologic conferences.

### VI. RESOURCES

Experience has shown that modern medicine cannot be acceptably taught by a school which depends solely on the income from students' fees. No medical school, therefore, should expect to secure approval which does not have a substantial income in addition to students' fees. This statement carries double weight if the school finds it necessary to maintain its own teaching hospital.

## VII. REQUIREMENTS FOR ADMISSION

1. The minimum requirement for admission to approved medical schools is two years of college training which include English, theoretical and practical courses in physics, biology, and general and inorganic chemistry. Three years or more in college is, however, recommended.

2. Since it cannot in general be assumed that all who have satisfied these requirements merely in terms of hourly credits are fitted for the study of medicine, it is desirable that qualitative standards for admission should be imposed.

3. As a rule candidates should have received their preliminary education in institutions approved by accrediting agencies acceptable to the Council. Exception to this rule may be made in the case of applicants who have demonstrated superior ability. For the convenience of admitting officers the Council has prepared a list of colleges of arts and sciences approved by national and regional educational associations.

4. Admission to approved medical schools may also be by examination under the following conditions:

(a) Candidates who have completed two years of collegiate instruction and present evidence of general scholarship of high order, but who lack credits in not more than two of the required subjects, may be admitted on passing examinations in these subjects.

(b) Candidates who have completed three years of collegiate instruction and present evidence of having accomplished work of distinction in one or more fields of learning, but who lack credit in any or all of the required subjects, may be admitted on passing examinations in these subjects.

## VIII. CURRICULUM

The entire course of four academic years should consist of from 3,600 to 4,400 hours, distributed as from 900 to 1,100

hours a year, and shall be grouped as set forth in the following schedule, each group to be allotted approximately the percentage of hours of the whole number of hours in the courses as stated:

	Number	Per Cent.
1. Anatomy, including embryology and histology..	14	18.5
2. Physiology .....	4½	6
3. Biochemistry .....	3½	4.5
4. Pathology, bacteriology and immunology.....	10	13
5. Pharmacology .....	4	5
6. Hygiene and sanitation.....	3	4
7. General medicine .....	20	26.5
Neurology and psychiatry		
Pediatrics		
Dermatology and syphilis		
8. General surgery .....	13	17.5
Orthopedic surgery		
Urology		
Ophthalmology		
Otolaryngology		
Roentgenology		
9. Obstetrics and gynecology.....	4	5
Total .....	76	100
Electives .....	24	0

When the teaching conditions demand it, a subject may be transferred from one division to another.

Several of the medical schools now require an internship for graduation. Where it is not obligatory it is strongly urged and graduates should be assisted in securing internships in hospitals approved by the Council on Medical Education and Hospitals of the American Medical Association.

## ESSENTIALS OF AN ACCEPTABLE SCHOOL OF OCCUPATIONAL THERAPY

## I. ORGANIZATION

1. A school of occupational therapy should be incorporated under the laws regulating associations operated not for profit. The control should be vested in a board of trustees composed of public spirited men or women having no financial interest in the operation of the school. The trustees should serve for fairly long and overlapping terms. If the choice of trustees is vested in any other body than the board itself, this fact should be clearly stated. Officers and faculty of the school should be appointed by the board.

2. Affiliation with a college, university or medical school is highly desirable but is not an absolute requirement.

3. Schools of occupational therapy should not be operated by hospitals independently. It is understood, however, that hospitals are needed for practice training in the several branches of occupational therapy as required under clinical affiliations.

## II. RESOURCES

Experience has shown that an adequate school of occupational therapy cannot be maintained solely by the income from students' fees. No occupational therapy school, therefore, should expect to secure approval which does not have a substantial additional income.

## III. FACULTY

The school should have a competent teaching staff, graded and organized by departments. Appointments should be based on thorough education and training and successful teaching experience. The staff should include not less than one regular salaried instructor and one registered occupational therapist. The question of full time and part time appointments is not as important as the qualifications of the instructors, who should be specialists or exceptionally well trained in the lines they are teaching.

## IV. PLANT

1. The school should own, or enjoy the use of, buildings sufficient in size to provide adequate lecture rooms, class labora-

tories and administration offices. Equipment should be adequate for efficient teaching in the various departments.

2. A library containing standard texts and leading periodicals in occupational therapy should be provided.

## V. ADMINISTRATION

1. SUPERVISION.—There should be careful and intelligent supervision of the entire school by the dean, director or other executive officer who, by training and experience, is fitted to interpret the prevailing standards and who is clothed with sufficient authority to carry them into effect.

2. RECORDS.—There should be a good system of records showing conveniently and in detail the credentials, attendance, grades and accounts of the students, by means of which an exact knowledge can be obtained regarding each student's work. Schools should require that students be in actual attendance within the first week of each annual session and thereafter. Except for good cause, no credit should be given for any course when attendance has been less than 80 per cent.

3. CREDENTIALS.—The admission of students to the occupational therapy school must be in the hands of a responsible committee or examiner, whose records shall always be open for inspection. Documentary evidence of the student's preliminary education should be obtained and kept on file. When the occupational therapy school is an integral part of the university, this work usually devolves on the examiner or registrar.

4. ADVANCED STANDING.—At the discretion of the administration, advanced standing may be granted for work (or experience) required in the occupational therapy curriculum which has been done in other accredited institutions. Official verification of previous work (or experience) should be obtained by direct correspondence. Preliminary qualifications should also be verified and recorded.

5. NUMBER OF STUDENTS.—The number of students admitted to the training course should not be excessive. In practical work of a laboratory nature the number of students that can

be adequately supervised by a single instructor is, in general experience, about fifteen; in lectures the number may be much larger. A close personal contact between students and members of the teaching staff is essential.

6. **DISCIPLINE.**—All training schools reserve the right to drop a student at any time for any cause which the school authorities deem sufficient.

7. **PUBLICATIONS.**—The school should issue, at least biennially, a bulletin setting forth the character of the work which it offers. Such an announcement should contain a list of the members of the faculty with their respective qualifications.

#### VI. CLINICAL AFFILIATIONS

1. No student should be eligible for entrance into clinical training until she has satisfactorily completed at least one academic year, equal to thirty semester credits, fifteen of which should be in biologic science, social science, theory of occupational therapy and clinical subjects and fifteen in therapeutic occupations.

2. Hospitals or institutions affiliating for clinical training should be carefully judged by the board of directors of the school concerned and be acceptable to the Council on Medical Education and Hospitals and should not be considered eligible for training of students unless the director of the occupational therapy department is a competent occupational therapist qualified to handle students.

3. The occupational therapy director of each training department should be considered a member of a special committee on the training school staff and at all times be in close contact with the director of the school.

4. A well defined program of lectures, clinics and staff meetings should be offered by the hospital to each group of students.

5. Written records, case studies and examinations should be required of each student. Students should obtain satisfactory rating in clinical training before a diploma is granted.

6. Uniform written records specially covering the student's personal adjustment as well as general ability should be kept by the occupational therapy director of each department, regular copy of which should be sent to the school at frequent intervals and all reports filed in the individual student's record at the school.

#### VII. PREREQUISITES FOR ADMISSION

1. **AGE.**—The admission of candidates should be governed by the fact that it is required that each student be not less than 21 years of age at graduation.

2. **EDUCATION.**—All candidates must furnish proof of having completed a high school education or its equivalent. Equivalent of high school should be adjudged and recorded by the admissions committee of the school. In addition, all candidates, except those for the degree course, must have had at least one year and preferably two years of further accredited education or successful professional training or experience.

Candidates for admission to a training course in a college or university which is combined with work leading to a bachelor's degree should be required to comply with the regular entrance requirements of the institution concerned.

3. **CHARACTER.**—All candidates should be required to present evidence of good character and general fitness, the evidence of which should be investigated and duly weighed by the school concerned.

4. **HEALTH.**—All students should be given a medical examination under the supervision of the school as soon as practicable after admission, and this examination should be repeated annually. The first examination, at least, should include a tuberculin test followed by a roentgen examination of the chest when indicated.

#### VIII. CURRICULUM

1. **LENGTH OF COURSE.**—The minimum length of the course should be twenty-five calendar months (100 weeks) of full time training. The course should include not less than sixteen months (sixty-four weeks) of theoretical and technical instruction and not less than nine months (thirty-six weeks) of hospital practice-

training under competent supervision; all as set forth in detail in succeeding sections.

2. **DISTRIBUTION OF TIME.**—The two years devoted to theoretical and technical training should include not less than sixty semester hours, of which not less than thirty semester hours should consist of didactic instruction and not less than twenty-five hours of technical instruction in therapeutic occupations.

(a) **Theoretical:** The hours devoted to theoretical training should be still further subdivided as follows:

	Semester Hours
(1) Biologic Sciences to include:	
Anatomy	15
Kinesiology	
Neurology	
Physiology	
Psychiatry	
Psychology	
(2) Social Sciences to include:	
Sociology	4
Delinquency and Crime	
Social and Educational Agencies	
(3) Theory of Occupational Therapy to include:	
Interpretative courses covering the principles and practice of occupational therapy in relation to orthopedics, pediatrics, tuberculosis, psychiatry, general medicine and surgery and other special fields	4
(4) Clinical Subjects to include:	
Blindness and Deafness	4
Cardiac Diseases	
Communicable Diseases (including Bacteriology if this subject is not given elsewhere)	
General Medical and Surgical Conditions	
Orthopedics	
Tuberculosis	
(5) Electives	3
Total	30

(b) **Technical:** Because of the increasing demands of the medical profession for qualified therapists trained in special fields applicable to the education and training of disabled persons as well as to the treatment of the sick, there must be a certain amount of flexibility in technical requirements.

Concentration may be in the field of *Therapeutic Arts and Crafts*, in some branch of *Educational Therapy*, or in *Recreational Therapy*.

A minimum of thirty semester hours should be devoted to technical training. The major portion may be allotted to concentration in one field and, in this case, survey courses should be given in the other fields.

- (1) The Field of Therapeutic Arts and Crafts to include:  
Design  
Leather  
Metal  
Plastic Arts  
Textiles  
Wood
- (2) The Field of Educational Therapy to include:  
Adult Education  
Fine and Applied Arts  
Home Economics  
Hospital Library Management  
Primary and Secondary Education
- (3) The Field of Recreational Therapy to include:  
Dramatics  
Gardening  
Music  
Physical Education  
Social Recreation

Advanced standing may be given to students already qualified in one or more branches of the three fields. Such persons may then be given survey courses in the other fields of concentration, and practice in the application of their specialty to the treatment of disabled persons.

(c) **Clinical Affiliations:** The time devoted to hospital practice-training shall be not less than nine months spent in the following types of hospitals:

Mental hospitals	Not less than two months.
Tuberculosis sanatoriums or services	Not less than one month.
General hospitals	Not less than one month.
Children's hospitals or services	Not less than one month.
Orthopedic hospitals or services	Not less than one month.

The remaining three months optional.

### APPROVED SCHOOLS FOR OCCUPATIONAL THERAPY TECHNICIANS

Boston School of Occupational Therapy, Boston  
Kalamazoo State Hospital School of Occupational Therapy,\* Kalamazoo, Mich.  
St. Louis School of Occupational and Recreational Therapy, St. Louis  
Philadelphia School of Occupational Therapy, Philadelphia  
Milwaukee-Downer College, Department of Occupational Therapy, Milwaukee  
University of Toronto, Department of University Extension, Toronto, Ontario, Canada

\* Tentatively approved.

### APPROVED SCHOOLS FOR PHYSICAL THERAPY TECHNICIANS

Children's Hospital, Los Angeles  
Stanford University Hospitals, San Francisco  
Walter Reed General Hospital, Washington, D. C.  
Northwestern University Medical School, Chicago  
Bouvé-Boston School of Physical Education, Boston  
Harvard Medical School, Course 445, Boston  
Boston University, Sargent College of Physical Education, Cambridge, Mass.  
St. Louis University School of Nursing, St. Louis  
University of Buffalo, Buffalo  
Hospital for Ruptured and Crippled, New York City  
D. T. Watson School of Physiotherapy, Leetsdale, Pa.  
College of William and Mary, Richmond, Va.  
University of Wisconsin, Madison

### APPROVED SCHOOLS FOR CLINICAL LABORATORY TECHNICIANS

**ARKANSAS**  
University of Arkansas, Little Rock

**CALIFORNIA**  
Children's Hospital, Los Angeles  
College of Medical Evangelists, Los Angeles  
Los Angeles County Hospital, Los Angeles  
Huntington Memorial Hospital, Pasadena  
Mary's Help Hospital, San Francisco  
St. Luke's Hospital, San Francisco  
University of California Hospital, San Francisco

**COLORADO**  
Children's Hospital, Denver  
University of Denver, Denver

**GEORGIA**  
University of Georgia School of Medicine, Augusta  
Emory University, Emory University

**ILLINOIS**  
Michael Reese Hospital, Chicago  
Mt. Sinai Hospital, Chicago  
Northwestern University Medical School, Chicago  
Evanston Hospital, Evanston  
St. John's Hospital, Springfield  
St. Therese's Hospital, Waukegan

**INDIANA**  
Baptist City Hospital, Indianapolis  
School of  
Methodist Episcopal Hospital, Indianapolis  
South Bend Medical Laboratory, South Bend

**KANSAS**  
Bethany Methodist Hospital, Kansas City  
University of Kansas Hospitals, Kansas City  
St. Francis Hospital, Wichita  
Wichita Hospital, Wichita

**KENTUCKY**  
St. Joseph's Hospital, Lexington  
University of Kentucky, Lexington  
St. Joseph Infirmary, Louisville  
SS. Mary and Elizabeth Hospital, Louisville  
State Board of Health, Louisville

**LOUISIANA**  
Loyola University, New Orleans

**MAINE**  
Central Maine General Hospital, Lewiston

**MARYLAND**  
Mercy Hospital, Baltimore

**MASSACHUSETTS**  
Simmons College, Boston  
Mercy Hospital, Springfield  
Worcester State Hospital, Worcester  
Worcester City Hospital, Worcester

**MICHIGAN**  
Leila Y. Post Montgomery Hospital, Battle Creek  
Mercy Hospital, Bay City  
City of Detroit Receiving Hospital, Detroit  
Grace Hospital, Detroit  
Henry Ford Hospital, Detroit  
Providence Hospital, Detroit  
Wayne University, Detroit  
Woman's Hospital, Detroit  
Michigan State College, East Lansing  
William J. Seymour Hospital, Eloise

**MINNESOTA**  
College of St. Scholastica, Duluth  
St. Luke's Hospital, Duluth  
Fairview Hospital, Minneapolis  
Minneapolis General Hospital, Minneapolis  
Northwestern Hospital, Minneapolis  
Swedish Hospital, Minneapolis  
University of Minnesota, Minneapolis  
Charles T. Miller Hospital, St. Paul

**MISSISSIPPI**  
Vicksburg Sanitarium and Crawford Street Hospital, Vicksburg

**MISSOURI**  
University of Missouri School of Medicine, Columbia  
Kansas City Health Department Laboratory, Kansas City  
Memorial Hospital, Kansas City  
Research Hospital, Kansas City  
St. Joseph Hospital, Kansas City  
St. Luke's Hospital, Kansas City  
St. Mary's Hospital, Kansas City  
St. Louis University School of Nursing, St. Louis

**MONTANA**  
State University of Montana, Missoula

**NEBRASKA**  
Bryan Memorial Hospital, Lincoln  
Lincoln General Hospital, Lincoln  
University of Nebraska Hospital, Omaha

**NEW HAMPSHIRE**  
Mary Hiteheok Memorial Hospital, Hanover

**NEW YORK**  
Bender Hygienic Laboratory, Albany  
Jewish Hospital, Brooklyn  
St. John's Hospital, Brooklyn  
Buffalo City Hospital, Buffalo  
Buffalo General Hospital, Buffalo  
St. Joseph's Hospital, Elmira  
Mary Immaculate Hospital, Jamaica  
Rochester General Hospital, Rochester  
Ellis Hospital, Schenectady  
Russell Sage College, Troy

**NORTH CAROLINA**  
Duke Hospital, Durham  
**OHIO**  
Institute of Pathology, Western Reserve University, Cleveland  
Mt. Sinai Hospital, Cleveland  
Starling-Loving University Hospital, Columbus  
White Cross Hospital, Columbus  
Huron Road Hospital, East Cleveland  
College of Mount St. Joseph of the Ohio, Mount St. Joseph  
Youngtown Hospital, Youngtown

**OKLAHOMA**  
St. Anthony's Hospital, Oklahoma City  
State University and Crippled Children's Hospitals, Oklahoma City

**OREGON**  
Emanuel Hospital, Portland  
Good Samaritan Hospital, Portland  
St. Vincent's Hospital, Portland  
University of Oregon, Portland

**PENNSYLVANIA**  
Abington Memorial Hospital, Abington  
Moravian College for Women, Bethlehem  
St. Luke's Hospital, Bethlehem  
Bryn Mawr Hospital, Bryn Mawr  
Fitzgerald-Mercy Hospital, Darby  
Harrisburg Hospital, Harrisburg  
Harrisburg Polyclinic Hospital, Harrisburg  
Bucknell University, Lewisburg  
Germanatown Dispensary and Hospital, Philadelphia  
Jefferson Medical College Hospital, Philadelphia  
Lankenau Hospital, Philadelphia  
Mt. Sinai Hospital, Philadelphia  
St. Agnes Hospital, Philadelphia  
St. Joseph's Hospital, Philadelphia  
Temple University, Philadelphia  
Reading Hospital, Reading  
Moses Taylor Hospital, Scranton  
Scranton State Hospital, Scranton

**SOUTH CAROLINA**  
Spartanburg General Hospital, Spartanburg

**TENNESSEE**  
Knoxville General Hospital, Knoxville  
John Gaston Hospital, Memphis

**TEXAS**  
Hotel Dieu Hospital, Beaumont  
Baylor University Hospital, Dallas  
St. Paul's Hospital, Dallas  
John Sealy Hospital, Galveston  
St. Mary's Infirmary, Galveston  
Robert B. Green Memorial Hospital, San Antonio

**VIRGINIA**  
College of William and Mary, Richmond  
Johnston-Willis Hospital, Richmond  
Medical College of Virginia Hospital Division, Richmond  
Stuart Circle Hospital, Richmond

**WASHINGTON**  
State College of Washington, Pullman  
Deaconess Hospital, Spokane  
Sacred Heart Hospital, Spokane  
St. Luke's Hospital, Spokane  
St. Joseph's Hospital, Tacoma  
Tacoma General Hospital, Tacoma

**WISCONSIN**  
Madison General Hospital, Madison  
St. Mary's Hospital, Madison  
University of Wisconsin, Madison  
Milwaukee Hospital, "The Passavant," Milwaukee  
St. Joseph's Hospital, Milwaukee  
Milwaukee County General Hospital, Wauwatosa

## DESCRIPTION OF MEDICAL COLLEGES

## ALABAMA

## University (Tuscaloosa)

UNIVERSITY OF ALABAMA SCHOOL OF MEDICINE.—Organized in 1859 at Mobile as the Medical College of Alabama. Classes graduated in 1861 and subsequent years excepting 1862 to 1868, inclusive. Reorganized in 1897 as the medical department of the University of Alabama. Present title assumed in 1907, when all property was transferred to the University of Alabama. In 1920 clinical teaching was suspended and the medical school was removed to the university campus near Tuscaloosa. Coeducational since 1920. Minimum entrance requirements are three years of collegiate work. The course of study covers two years of thirty-six weeks each. The faculty includes 15 professors and 12 instructors, assistants, etc., a total of 27. The tuition fees are \$271 each year. Each class is limited to fifty students. The registration for 1937-1938 was 91. The next session begins Sept. 15, 1938, and ends May 30, 1939. The Dean is Stuart Graves, M.D.

## ARKANSAS

## Little Rock

UNIVERSITY OF ARKANSAS SCHOOL OF MEDICINE, 1209 McAlmont Street.—Organized in 1879 as the Medical Department of Arkansas Industrial University. Present title in 1899. In 1911 the College of Physicians and Surgeons united with it and it became an integral part of the University of Arkansas. The first class was graduated in 1880. Clinical teaching was suspended in 1918 but resumed in 1923. Coeducational since organization. The faculty consists of 26 professors and 74 lecturers and assistants, total 100. The curriculum covers four years of nine months each. Entrance requirements are two years of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. The fees for the four years for residents of Arkansas are \$275; nonresidents are charged \$155 additional each year. The registration for 1937-1938 was 298; graduates, 80. The next session begins Sept. 28, 1938, and ends June 6, 1939. The Dean is Frank Vinsonhaler, M.D.

## CALIFORNIA

## Berkeley-San Francisco

UNIVERSITY OF CALIFORNIA MEDICAL SCHOOL, University Campus, Berkeley; Medical Center, San Francisco.—Organized in 1862 as the Toland Medical College. The first class graduated in 1864. In 1872 it became the Medical Department of the University of California. In 1909, by legislative enactment, the College of Medicine of the University of Southern California, at Los Angeles, became a clinical department but was changed to a graduate school in 1914. In 1915 the Hahnemann Medical College of the Pacific was merged, and elective chairs in homeopathic materia medica, and therapeutics were provided. Coeducational since organization. Three years of collegiate work is required for admission. The work of the first year is given at Berkeley and that of the last three years at San Francisco. The faculty is composed of 153 professors and 235 associates and assistants, a total of 388. The course covers four years of eight months each, and an additional fifth year consisting of an internship in a hospital or of special work in a department of the medical school. Fees for the four years, respectively, for residents of California are \$277, \$240, \$235 and \$235; nonresidents are charged \$300 additional each year. The registration for 1937-1938 was 247; graduates, 63. The next session begins Aug. 22, 1938, and ends May 20, 1939. The Dean is Langley Porter, M.D., San Francisco.

## Loma Linda-Los Angeles

COLLEGE OF MEDICAL EVANGELISTS.—Organized in 1909. The first class graduated in 1914. The laboratory departments are at Loma Linda, the clinical departments at Los Angeles. Coeducational since organization. The faculty is composed of 55 professors and 263 associates, assistants and instructors, a total of 318. The course covers a period of four years of nine months each and an additional year consisting of an internship in an approved hospital. Sixty-four semester hours of collegiate work are required for admission. The total fees for the four years, respectively, are \$530, \$435, \$530 and \$540. The registration for 1937-1938 was 384; graduates, 102. The next session begins September 5, 1938, and ends June 11, 1939. The Dean is E. H. Risley, M.D., Loma Linda; and the Associate Dean is W. E. Macpherson, M.D., Los Angeles.

## Los Angeles

UNIVERSITY OF SOUTHERN CALIFORNIA SCHOOL OF MEDICINE, 3551 University Avenue.—Organized in 1885 as the University of Southern California College of Medicine. First class graduated in 1888. In 1903 it became the Medical Department of the University of California in Los Angeles. In 1909 the College of Physicians and Surgeons, established in 1904, became the Medical Department of the University of Southern California. Its activities were suspended in 1920; reorganized in May 1928, under present title. The faculty consists of 149 professors and 148 instructors, assistants and others, a total of 297. An internship is required for graduation. Three years of collegiate work is required for admission. Coeducational since organization. Annual fees amount to \$452. The registration for 1937-1938 was 190; graduates, 41. The next session begins Sept. 19, 1938, and ends June 10, 1939. The Dean is Paul S. McKibben, Ph.D.

## San Francisco

STANFORD UNIVERSITY SCHOOL OF MEDICINE, 2398 Sacramento Street, San Francisco.—Organized in 1908, when, by agreement, the interests of Cooper Medical College were taken over. The first class graduated in 1913. Coeducational since organization. The faculty consists of 129 professors and 149 lecturers, assistants, and others, a total of 278. Three years of collegiate work is required for admission. The course covers four years of eight and one-half months, each, plus a fifth year of intern work. The fees for the four years, respectively, are \$470, \$446, \$364 and \$364. The registration for 1937-1938 was 237; graduates, 63. The next session begins September 27, 1938, and ends June 14, 1939. The Dean is Loren Roscoe Chandler, M.D.

## COLORADO

## Denver

UNIVERSITY OF COLORADO SCHOOL OF MEDICINE, 4200 East Ninth Avenue.—Organized in 1883. Classes were graduated in 1885 and in all subsequent years except 1898 and 1899. Denver and Gross College of Medicine was merged, Jan. 1, 1911. Coeducational since organization. The faculty is composed of 57 professors and 130 lecturers, instructors and assistants, a total of 187. The course covers four years of nine months each. The entrance requirements are three years of collegiate work. The fees for residents of Colorado, for each of the four years are, respectively, \$271, \$261, \$251 and \$246. Nonresidents are charged \$195 additional each year. The registration for 1937-1938 was 207; graduates, 49. The next session begins Sept. 26, 1938, and ends June 12, 1939. The Dean is Maurice H. Rees, M.D.

## CONNECTICUT

## New Haven

YALE UNIVERSITY SCHOOL OF MEDICINE, 333 Cedar Street.—Chartered in 1810 as the Medical Institution of Yale College. Organized in 1812; instruction began in 1813; first class graduated in 1814. A new charter in 1879 changed the name to the Medical Department of Yale College. In 1884, the Connecticut Medical Society surrendered such authority as had been granted by the first charter. In 1887, Yale College became Yale University. Coeducational since 1916. The faculty consists of 153 professors and 209 lecturers and assistants, a total of 362. The requirements for admission are three years of collegiate work. The course covers four years of nine months each. The fees for the four years, respectively, are \$505, \$500, \$500 and \$520. The registration for 1937-1938 was 190; graduates, 40. The next session begins Sept. 26, 1938, and ends June 14, 1939. The Dean is Stanhope Bayne-Jones, M.D.

## DISTRICT OF COLUMBIA

## Washington

GEORGETOWN UNIVERSITY SCHOOL OF MEDICINE, 3900 Reservoir Road, N.W.—Organized in 1851. First class graduated in 1852. The faculty is composed of 63 professors, 45 associate professors, 28 assistant professors and 119 instructors; total 263. Required for admission, three years of collegiate work. The course of study covers four terms of eight and one-half months each. The present fees for each of the four sessions, are \$500. The registration for 1937-1938 was 350; graduates, 107. The next session begins Sept. 19, 1938, and ends June 12, 1939. The Dean is David V. McCauley, S.J., Ph.D.

GEORGE WASHINGTON UNIVERSITY SCHOOL OF MEDICINE, 1335 H Street, N.W.—Organized in 1825 as the Medical Department of Columbian College. Also authorized to use the name National Medical College. Classes were graduated in 1826 and in all subsequent years except 1834 to 1838, and 1861 to 1863, inclusive. The original title was changed to Medical Department of Columbian University in 1873. In 1903 it absorbed the National University Medical Department. In 1904, by an Act of Congress, the title of George Washington University was granted to the institution. Coeducational since 1884. The faculty is composed of 57 professors and 111 instructors, demonstrators and assistants, a total of 168. Two years of collegiate work is required for admission. The course covers four years of thirty-six weeks each. The fees for the four years, respectively, are \$550, \$550, \$550 and \$500. The registration for 1937-1938 was 249; graduates, 68. The next session begins Sept. 28, 1938, and ends June 14, 1939. The Dean is Earl B. McKinley, M.D.

HOWARD UNIVERSITY COLLEGE OF MEDICINE, Fifth and W Streets, N.W.—Chartered in 1867. Organized in 1869. The first class graduated in 1871. Coeducational since organization. Negro students compose a majority of those in attendance. The faculty comprises 34 professors and 79 lecturers and assistants, 113 in all. The admission requirements are at least two years of collegiate work. The course covers four years of thirty-three weeks each. The fees for each of the four sessions, respectively, are \$269, \$269, \$259 and \$266. Registration for 1937-1938 was 131; graduates, 22. The next session begins Sept. 26, 1938, and ends June 9, 1939. The Dean is Numa P. G. Adams, M.D.

## GEORGIA

## Atlanta

EMORY UNIVERSITY SCHOOL OF MEDICINE, 50 Armstrong Street and Druid Hills.—Organized in 1854 as the Atlanta Medical College. Classes graduated 1855 to 1861, when it suspended. Reorganized in 1865. A class graduated in 1865 and each subsequent year except 1874.



In 1898 it merged with the Southern Medical College (organized in 1878), taking the name of Atlanta College of Physicians and Surgeons. In 1913 it merged with the Atlanta School of Medicine (organized in 1905), reassuming the name of Atlanta Medical College. Became the Medical Department of Emory University in 1915; assumed present title in 1917. Three years of collegiate work is required for admission. The faculty consists of 18 professors and 177 associates and assistants, a total of 195. The course of study is four years of thirty-two weeks each. The fees for each of the four years are \$338. The registration for 1937-1938 was 220; graduates, 60. The next session begins Sept. 26, 1938, and ends June 5, 1939. The Dean is Russell H. Oppenheimer, M.D.

### Augusta

**UNIVERSITY OF GEORGIA SCHOOL OF MEDICINE, University Place.**—Organized in 1828 as the Medical Academy of Georgia, the name being changed to the Medical College of Georgia in 1829. Since 1873 it has been known as the Medical Department of the University of Georgia, the name being changed July 1, 1933, to the University of Georgia School of Medicine. Property transferred to university in 1911. Classes were graduated in 1833 and all subsequent years except 1862 and 1863. Coeducation was begun in 1920. The faculty includes 59 professors and 30 assistants, 89 in all. Three years of collegiate work is required for admission. The course is four years of thirty-four weeks each. The fees for each of the four years are \$185 for residents of Georgia, and \$365 each year for nonresidents. The registration for 1937-1938 was 151; graduates, 34. The next session begins Sept. 21, 1938, and ends June 5, 1939. The Dean is G. Lombard Kelly, M.D.

### ILLINOIS

#### Chicago

**LOYOLA UNIVERSITY SCHOOL OF MEDICINE, 706 South Wolcott Avenue.**—Incorporated in 1915 as the Bennett Medical College, and operated as an organic part of Loyola University, by virtue of an agreement entered into with the trustees of Bennett Medical College. Present title assumed in 1917. The Chicago College of Medicine and Surgery was purchased in 1917. The first class graduated in 1916. Coeducational. Three years of collegiate work is required for admission. The course of study is five years, including an internship. The B.S. degree in medicine is conferred at the end of the third year. The faculty is composed of 120 in professorial rank and 140 others, a total of 260. The fees for each year are \$450, \$437, \$366 and \$328, respectively. The enrollment for 1937-1938 was 403; graduates, 115. Next session for juniors and seniors begins September 6, 1938, for freshmen and sophomores, September 19, 1938, and ends June 15, 1939. The Dean is Louis D. Moorhead, M.D.

**NORTHWESTERN UNIVERSITY MEDICAL SCHOOL, 303 East Chicago Avenue.**—Organized in 1859 as the Medical Department of Lind University. First class graduated in 1860. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869 but retained the name of Chicago Medical College until 1891, when the present title was taken. Became an integral part of Northwestern University in 1905. Coeducational since 1926. The faculty comprises 139 professors, 316 associates and instructors, a total of 455. The requirement for admission is three years of collegiate work. The B.S. degree in medicine may be conferred before the end of the senior year. The course covers four years of eight and one-half months each and a fifth year spent in an approved hospital as an intern or in other practical work. The total fees are \$365 each year. The registration for 1937-1938 was 558; graduates, 141. The next session begins Sept. 27, 1938, and ends June 10, 1939. The Dean is Irving S. Cutter, M.D.

**THE UNIVERSITY OF CHICAGO MEDICAL SCHOOLS.**—The Medical Schools include (a) The School of Medicine of the Division of Biological Sciences and (b) Rush Medical College, both of which are organized within the Division of Biological Sciences. The first two years of the medical course for both are given in the School of Medicine of the Division of Biological Sciences and the last two years are given either in the School of Medicine of the Division of Biological Sciences or in Rush Medical College.

**The School of Medicine of the Division of Biological Sciences, Fifty-Ninth Street and Ellis Avenue.**—Organized in 1924. The work of the first two years of the medical course has been given on the Quadrangles since 1899, in cooperation with Rush Medical College, and that of the third and fourth clinical years has been given since 1924 with the organization of this medical school and the construction on the Quadrangles of the University hospitals and clinics. Coeducational. The faculty is composed of 98 professors, 132 associates, instructors and others, a total of 230. The requirements for admission are three years of collegiate work. The B.S. degree in medicine may be obtained during the second year. The curriculum covers twelve quarters of work. Students are admitted at the beginning of the autumn quarter. The tuition fee for each of the four years is \$450. The registration for 1937-1938 was 287; graduates, 52. The next session begins Oct. 3, 1938, and ends June 14, 1939.

**Rush Medical College, 1758 West Harrison Street.**—Chartered in 1837; held first class in 1843. First class graduated in 1844. In 1887 the college became the medical department of Lake Forest University, retaining, however, its self government. This relation was dissolved in April, 1898, and in the same month affiliation with the University of Chicago was established. Coeducational since 1898. In May, 1924, by a new contract, the University of Chicago took over the work of Rush Medical College as a department of the University. Thereafter only clinical work has been offered by Rush Medical College. The work of the first two years is given on the University Quadrangles. Three years of collegiate work are required for admission. The year is divided into four quarters of twelve weeks each; the completion of the work of three of these quarters gives credit for a college year. The requirements for the degree

consists of twelve full quarters of work. The faculty is composed of 149 professors, 157 associates, instructors and others, a total of 297. The tuition fee is \$450 for juniors and \$375 for seniors. Effective autumn 1939 the fee for seniors will be increased to \$450. The registration for 1937-1938 was 262; graduates, 168. The next session begins Oct. 3, 1938, and ends June 13, 1939. The school is in session all year except the month of September.

All correspondence relating to general policies should be addressed to W. H. Taliaferro, Ph.D., Dean of the Division of Biological Sciences, or to A. C. Bachmeyer, M.D., Associate Dean of the Division; that relating to Rush Medical College should be addressed to Emmet B. Ray, M.D., Associate Dean of the Division of Biological Sciences (Rush Medical College); and that pertaining to student questions should be addressed to B. C. H. Harvey, M.D., Dean of Students.

**UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE, 1853 West Park Street.**—Organized in 1882 as the College of Physicians and Surgeons. The first class graduated in 1883. It became the Medical Department of the University of Illinois by affiliation in 1897. Relationship with the university was canceled in June, 1912, and was restored in March, 1913, when the present title was assumed. Coeducational since 1898. Three years of collegiate work is required for admission. The curriculum covers four years of thirty-two weeks each, and a year of internship in an approved hospital. The B.S. degree in medicine is conferred at the end of the second year. The faculty is composed of 143 of professorial rank and 317 associates, instructors and assistants, a total of 460. The tuition is \$150 a year for students who are residents of Illinois; \$223 a year for nonresident students. The registration for 1937-1938 was 634; graduates, 150. The next session begins Sept. 26, 1938, and ends June 9, 1939. The Dean is David J. Davis, M.D.

### INDIANA

#### Bloomington-Indianapolis

**INDIANA UNIVERSITY SCHOOL OF MEDICINE.**—Organized in 1903 but did not give all the work of the first two years of the medical course until 1905. In 1907, by union with the State College of Physicians and Surgeons, the complete course in medicine was offered. In 1908 the Indiana Medical College, which was formed in 1905 by the merger of the Medical College of Indiana (organized in 1878), the Central College of Physicians and Surgeons (organized in 1879), and the Fort Wayne College of Medicine (organized in 1879) merged into it. The first class was graduated in 1908. Coeducational since organization. The faculty consists of 270 professors, lecturers, associates and assistants. Three years of collegiate work is required for admission. The B.S. degree in medicine is conferred. The work of the first year is given at Bloomington and the work of the next three years at Indianapolis. The regular fee for the medical course for all four years is \$205 a year for residents of Indiana, and \$410 for nonresidents. The registration for 1937-1938 was 429; graduates, 87. The next session begins Sept. 17, 1938, and ends June 5, 1939. The Dean at Bloomington is Burton D. Myers, M.D., and the Dean at Indianapolis is Willis D. Gatch, M.D.

### IOWA

#### Iowa City

**STATE UNIVERSITY OF IOWA COLLEGE OF MEDICINE, University Campus.**—Organized in 1869. First session began in 1870. First class graduated in 1871. Absorbed Drake University College of Medicine in 1913. Coeducational since 1870. The faculty is made up of 56 professors, 64 lecturers, demonstrators and assistants, a total of 120. Three years of collegiate work is required for admission. The B.S. degree in the combined course of liberal arts and medicine is conferred. The course of study covers four years of thirty-four weeks each. The tuition fee is \$196 each year for residents of Iowa and \$460 for nonresidents. The registration for 1937-1938 was 369; graduates, 83. The next session begins Sept. 26, 1938, and ends June 5, 1939. The Dean is Ewen Murchison MacEwen, M.D.

### KANSAS

#### Lawrence-Kansas City

**UNIVERSITY OF KANSAS SCHOOL OF MEDICINE.**—Organized in 1880. It offered only the first two years of the medical course until 1905, when it merged with the Kansas City (Mo.) Medical College, founded in 1869, the College of Physicians and Surgeons, founded in 1894, and the Medico-Chirurgical College, founded in 1897. Absorbed Kansas Medical College in 1913. First class graduated in 1906. The clinical courses are given at Kansas City. Coeducational since 1880. The faculty includes 59 professors and 135 instructors, assistants and others, a total of 194. The requirement for admission is two years of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. The course covers four years of nine months each. The total fees for residents of the state for each of the four years are, respectively, \$148, \$147, \$155 and \$157. For nonresidents the fees are \$268, \$327, \$405 and \$407. The registration for 1937-1938 was 289; graduates, 67. The next session begins Sept. 22, 1938, and ends June 12, 1939. The Dean is H. R. Wahl, M.D., Kansas City.

### KENTUCKY

#### Louisville

**UNIVERSITY OF LOUISVILLE SCHOOL OF MEDICINE, First and Chestnut Streets.**—Organized in 1837 as Louisville Medical Institute. The first class graduated in 1838, and a class graduated each subsequent year except 1863. In 1846 the name was changed to University of Louisville Medical Department. In 1907 it absorbed the Kentucky University Medical Department; in 1908, the Louisville Medical College, the Hos-

pital College of Medicine and the Kentucky School of Medicine. In 1922 it changed its name to the University of Louisville School of Medicine. Coeducational since organization. Two years of collegiate work is the minimum requirement for admission. Preference is given applicants with a degree or three college years leading to a degree. The faculty numbers 74 professors and 95 assistants, instructors and others, a total of 169. Course covers four years of thirty-two weeks each, exclusive of vacations and examinations. Fees for four years are, respectively, \$404, \$404, \$409 and \$419. The registration for 1937-1938 was 342; graduates, 93. The next session begins Sept. 15, 1938, and ends June 3, 1939. The Dean is John Walker Moore, M.D.

## LOUISIANA

### New Orleans

LOUISIANA STATE UNIVERSITY MEDICAL CENTER, 1542 Tulane Avenue.—Organized January 1931. Coeducational. First session October 1931, with students of first and third year. Faculty comprises 33 professors and 134 assistant professors, instructors and assistants, a total of 167. Course covers four years of no less than 32 weeks each and one year of general rotation or laboratory internship in an approved hospital. A minimum of three years' collegiate work is required for admission. Total fees, \$137 each year for residents of Louisiana; additional tuition of \$400 each year for nonresidents. The registration for 1937-1938 was 307; graduates, 55. The next session begins Sept. 5, 1938, and ends May 27, 1939. The Dean is Rigney D'Aunoy, M.D.

TULANE UNIVERSITY OF LOUISIANA SCHOOL OF MEDICINE, 1430 Tulane Avenue.—Organized in 1834 as the Medical College of Louisiana. Classes were graduated in 1835 and in all subsequent years except 1863-1865, inclusive. It was transferred to the Medical Department of the University of Louisiana in 1847, and became the Medical Department of the Tulane University of Louisiana in 1884. Present title in 1913. Coeducational since 1915. The faculty comprises 34 professors and 198 associate and assistant professors, instructors and assistants, a total of 232. The course covers four years of thirty-two weeks each. A minimum of two years of collegiate work is required for admission. Total fees for each of the four years, respectively, are \$457, \$447, \$432 and \$442. The registration for 1937-1938 was 468; graduates, 113. The next session begins Sept. 23, 1938, and ends June 7, 1939. The Dean is Charles C. Bass, M.D.

## MARYLAND

### Baltimore

JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE, Washington and Monument Streets.—Organized in 1887. Offered preliminary course only until 1893. The first class graduated in 1897. Coeducational since organization. The faculty consists of 71 professors and 372 instructors, assistants and others, a total of 443. The requirement for admission is a collegiate degree. The course extends over four years of eight and one-half months each. The total fees for each year are, respectively, \$621, \$620, \$620 and \$620. The registration for 1937-1938 was 281; graduates, 76. The next session begins Sept. 27, 1938, and ends June 6, 1939. The Dean is Alan M. Chesney, M.D.

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE AND COLLEGE OF PHYSICIANS AND SURGEONS, Lombard and Greene Streets.—Organized in 1807 as the College of Medicine of Maryland. The first class graduated in 1810. In 1812 it became the University of Maryland School of Medicine. Baltimore Medical College was merged with it in 1913. In 1915 the College of Physicians and Surgeons of Baltimore was merged and the present name assumed. Coeducational since 1918. The faculty consists of 45 professors, 72 associate and assistant professors, and 191 instructors and assistants, a total of 308. Three years of collegiate work is required for admission. The course covers four years of eight months each. The fees for the four years, respectively, are: \$485, \$475, \$475 and \$490 for residents of the state; for nonresidents the fees are \$150 additional each year. The registration for 1937-1938 was 373; graduates, 102. The next session begins Sept. 22, 1938, and ends June 3, 1939. The Dean is J. M. H. Rowland, M.D.

## MASSACHUSETTS

### Boston

BOSTON UNIVERSITY SCHOOL OF MEDICINE, 80 East Concord Street.—Organized in 1873 as a homeopathic institution. In 1874 the New England Female Medical College, founded in 1848, was merged into it. The first class was graduated in 1874. Became nonsectarian in 1918. Coeducational since organization. Three years of collegiate work is required for admission. The faculty includes 25 professors, 165 associates and others, a total of 190. The course covers four years. Total fees for each of the four years, respectively, are \$475, \$425, \$425, \$439. The registration for 1937-1938 was 199; graduates, 43. The next session begins Sept. 22, 1938, for 1st, 2d and 3d year students, and Sept. 12, 1938, for 4th year students; and ends June 12, 1939. The Dean is Alexander S. Hegg, M.D.

HARVARD UNIVERSITY MEDICAL SCHOOL, 25 Shattuck Street.—Organized in 1782. The first class graduated in 1788. It has a faculty of 151 professors and 427 other instructors and assistants, a total of 578. Two years of collegiate work is required for admission. The total fees for each of the four years is \$420, plus \$5 the first year for matriculation. The registration for 1937-1938 was 520; graduates, 135. The next session begins Sept. 26, 1938, and ends June 22, 1939. The Dean is Charles Sidney Burwell, M.D.

TUFTS COLLEGE MEDICAL SCHOOL, 416 Huntington Avenue.—Organized in 1893 as the Medical Department of Tufts College. The first class graduated in 1894. Coeducational since 1894. It has a faculty of 81 professors and 295 assistants, lecturers and others, a total of 376. A bachelor's degree is required for admission. The course covers four

years of eight months each. The total fees for each of the four years are \$512, \$507, \$407 and \$417. The registration for 1937-1938 was 419; graduates, 109. The next session begins Sept. 21, 1938, and ends June 19, 1939. The Dean is A. Warren Stearns, M.D.

## MICHIGAN

### Ann Arbor

UNIVERSITY OF MICHIGAN MEDICAL SCHOOL.—Organized in 1850 as the University of Michigan Department of Medicine and Surgery. The first class graduated in 1851. Present title assumed in 1915. Coeducational since 1870. It has a faculty of 25 professors, 20 associate professors, 27 assistant professors, 114 assistants, instructors and lecturers; a total of 186. The entrance requirements are ninety semester hours. The curriculum covers four years of nine months each. The total fees for Michigan students are \$220 for each of the four years, respectively; for nonresidents, \$350 a year. The registration for 1937-1938 was 481; graduates, 102. The next session begins Sept. 26, 1938, and ends June 17, 1939. The Dean is A. C. Furstenberg, M.D.

### Detroit

WAYNE UNIVERSITY COLLEGE OF MEDICINE, 1516 St. Antoine Street.—Organized as the Detroit College of Medicine in 1885 by consolidation of Detroit Medical College, organized in 1868, and the Michigan College of Medicine, organized in 1880. Reorganized with the title of Detroit College of Medicine and Surgery in 1913. The first class graduated in 1886. In 1918 it became a municipal institution under the control of the Detroit Board of Education. In 1934 the name was changed by the action of the Detroit Board of Education to Wayne University College of Medicine, as a part of the program of consolidation of the Detroit City Colleges into a university system. Coeducational since 1917. Entrance requirement is an academic degree or 90 semester hours of academic credit with "combined degree" guaranteed by school of arts and sciences. The faculty consists of 47 professors, 230 lecturers and others, a total of 277. The course covers four years of nine months each and a fifth year of intern work. The total fees for each of the first four years are, for Wayne County residents \$325, and for nonresidents outside of Wayne County \$425; for the fifth or intern year a diploma fee of \$10. The registration for 1937-1938 was 260; graduates 78. The next session begins Sept. 19, 1938, and ends June 17, 1939. The Dean is Raymond B. Allen, M.D.

## MINNESOTA

### Minneapolis

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL.—Organized in 1883 as the University of Minnesota College of Medicine and Surgery, reorganized in 1888 by absorption of St. Paul Medical College and Minnesota Hospital College. The first class graduated in 1889. In 1908 the Minneapolis College of Physicians and Surgeons, organized in 1883, was merged. In 1909 the Homeopathic College of Medicine and Surgery was merged. Present title in 1913. Coeducational since organization. The faculty includes 90 professors and 238 instructors, a total of 328. The curriculum covers four years of nine months each, and a year's internship in an approved hospital. The school is operated on the four-quarter plan. The entrance requirements are two years of university work, which must include six semester credits of rhetoric, eight semester credits of physics; thirteen credits of general chemistry, qualitative and quantitative analysis and organic chemistry, eight credits of zoology, and a reading knowledge of scientific German, with a "C" average in all subjects and in the sciences. Beginning with the academic year 1939-1940 the minimum entrance requirement will be three years of college work with the addition of general psychology, physical chemistry and genetics and eugenics to the above specified courses. Students are required to meet the requirements for a degree of B.S. or B.A. before receiving the degree of Bachelor of Medicine (M.B.), which is granted at the end of the four-year course. The M.D. degree is conferred after a year of intern work, of advanced laboratory work, or of public health work has been completed. Students are graduated at the end of any quarter in which work is completed and examinations passed. Total fees are \$243 for residents and \$393 for nonresidents, each year of three quarters. The registration for 1937-1938 was 469; graduates, 117. The next session begins Sept. 26, 1938, and ends June 17, 1939. The Dean is Harold S. Diehl, M.D.

## MISSISSIPPI

### University

UNIVERSITY OF MISSISSIPPI SCHOOL OF MEDICINE.—Organized in 1903. Coeducational since organization. Gives only the first two years of the medical course. A clinical department was established at Vicksburg in 1908 but was discontinued in 1910 after graduating one class. The session extends over eight and one-half months. Entrance requirement is three years of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. The faculty includes 9 professors, 2 assistant professors, 2 adjunct professors, 14 instructors, assistants, and others, a total of 27. The total fees for the first year are \$353, and for the second year \$325. The nonresident fee is \$50 additional each year. The registration for 1937-1938 was 34. The next session begins Sept. 19, 1938, and ends June 5, 1939. The Dean is B. S. Guyton, M.D.

## MISSOURI

### Columbia

UNIVERSITY OF MISSOURI SCHOOL OF MEDICINE.—Organized at St. Louis in 1845; was discontinued in 1855 but was reorganized at Columbia in 1872. Teaching of the clinical years was suspended in 1909. Coeducational since 1872. The faculty includes 18 professors and 10 instructors, lecturers and others, a total of 28. The entrance requirements are 90 semester hours of collegiate work. The B.S. degree

in medicine is conferred at the end of the second year. Total fees for the first year are \$150, for the second, \$135. Nonresidents of the state pay \$40 per semester extra. The registration for 1937-1938 was 79. The next session begins Sept. 12, 1938, and ends June 6, 1939. The Dean is Dudley S. Conley, M.D.

### St. Louis

**ST. LOUIS UNIVERSITY SCHOOL OF MEDICINE**, 1402 South Grand Boulevard. Organized in 1901 as the Marion-Sims-Beaumont Medical College by union of Marion-Sims Medical College, organized in 1890, and Beaumont Hospital Medical College, organized in 1886. First class graduated in 1902. It became the Medical School of St. Louis University in 1903. The faculty is composed of 75 professors and 242 instructors and assistants, a total of 317. The completion of three years of college study is the minimum admission requirement but students presenting meritorious credits in excess of the minimum are accepted by preference. The B.S. degree in medicine, except for those already registered for this degree, has been discontinued (1937). The curriculum covers four years of thirty-two weeks each. The summer is optional and offers courses academically equivalent to those in the regular session. The total fees for the four years, respectively, are \$525, \$525, \$420 and \$455. The registration for 1937-1938 was 461; graduates, 103. The next session begins Sept. 20, 1938, and ends June 1, 1939. The Dean is Alphonse M. Schwittalla, S. J., Ph.D.

**WASHINGTON UNIVERSITY SCHOOL OF MEDICINE**, Kingshighway and Euclid Avenue.—Organized in 1842 as the Medical Department of St. Louis University. The first class graduated in 1843. In 1855 it was chartered as an independent institution under the name of St. Louis Medical College. In 1891 it became the Medical Department of Washington University. In 1899 it absorbed the Missouri Medical College. Coeducational since 1818. The faculty comprises 116 professors and 218 lecturers, instructors and others, a total of 334. Four years of collegiate work is required for admission. The B.S. degree in medicine is conferred at the end of the third or fourth year. The course is four years of eight months each. The total fees for the four years are, respectively, \$524, \$419, \$419 and \$424. The registration for 1937-1938 was 348; graduates, 96. The next session begins Sept. 22, 1938, and ends June 6, 1939. The Dean is Philip A. Shaffer, Ph.D.

## NEBRASKA

### Omaha

**CREIGHTON UNIVERSITY SCHOOL OF MEDICINE**, 306 North Fourteenth Street.—Organized in 1892 as the John A. Creighton Medical College. The first class graduated in 1893. Present title in 1921. Coeducational since organization. It has a faculty of 69 professors and 74 instructors, lecturers and assistants, a total of 143. Two years of collegiate work required for admission. The B.S. degree in medicine is conferred at the end of the second year. The curriculum covers four years of eight months each. The total fees each year for the four years are, respectively, \$393, \$393, \$348 and \$356. The registration for 1937-1938 was 262; graduates, 68. The next session begins Sept. 20, 1938, and ends June 1, 1939. The Dean is Bryan M. Riley, M.D.

**UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE**, Forty-Second Street and Dewey Avenue.—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882. It became the Medical Department of Omaha University in 1891. In 1902 it affiliated with the University of Nebraska, with the present title. The instruction of the first two years was given at Lincoln and of the last two at Omaha until 1913, when the work of all four years was transferred to Omaha. Coeducational since 1882. The faculty is composed of 71 professors and 52 lecturers and instructors, a total of 123. Three years of collegiate work is required for admission. The B.S. degree in medicine is conferred at the end of the second year. The fees for each of the four years, respectively, are \$219, \$214, \$214 and \$214. The registration for 1937-1938 was 319; graduates, 75. The next session begins Sept. 19, 1938, and ends June 6, 1939. The Dean is C. W. M. Poynter, M.D.

## NEW HAMPSHIRE

### Hanover

**DARTMOUTH MEDICAL SCHOOL**—Organized by Dr. Nathan Smith in 1797. The first class graduated in 1798. It is under the control of the trustees of Dartmouth College. Courses of the third and fourth year were discontinued in 1914. The faculty consists of 17 professors and 12 instructors, a total of 29. Three years of collegiate work is required for admission. The course covers nine calendar months in each year, or eight months of actual teaching. Candidates for the A.B. degree in Dartmouth College may substitute the work of the first year in medicine for that of the senior year in the academic department. The fees for the first year are \$460 and \$450 for the second year. The registration for 1937-1938 was 38. The next session begins Sept. 22, 1938, and ends June 16, 1939. The Dean is John P. Bowler, M.D.

## NEW YORK

### Albany

**ALBANY MEDICAL COLLEGE**, 47 New Scotland Avenue.—Organized in 1838. The first class graduated in 1839. It became the Medical Department of Union University in 1873. In 1915, Union University assumed educational control. Coeducational since 1915. The faculty is composed of 60 professors and 83 instructors, assistants and others, a total of 143. A collegiate degree is required for admission. The curriculum covers four years of eight months each. The total fees for four years, respectively, are \$455, \$430, \$415 and \$415. The registration for 1937-1938 was 110; graduates, 25. The next session begins Sept. 26, 1938, and ends June 12, 1939. The Dean is R. S. Cunningham, M.D.

### Brooklyn

**LONG ISLAND COLLEGE OF MEDICINE**, 350 Henry Street.—Organized in 1858 as the Long Island College Hospital. The first class graduated in 1860 and the last class in 1930. Reorganized with a new charter in 1930 as the present institution. The first class graduated in 1931. Coeducational. It has a faculty of 119 professors, associate, assistant, clinical and assistant clinical professors, and 171 lecturers, associates, instructors, assistants and others, a total of 290. Seventy-two semester hours of collegiate work is required for admission. The course covers four years. The total fee for each of the four years is \$610. The registration for 1937-1938 was 361; graduates, 88. The next session begins Sept. 12, 1938, for fourth year and Sept. 26 for other years, and ends June 10, 1939. The Dean is Jean Alonzo Curran, M.D.

### Buffalo

**UNIVERSITY OF BUFFALO SCHOOL OF MEDICINE**, 24 High Street.—Organized in 1846. The first class graduated in 1847. It absorbed the Medical Department of Niagara University in 1898. Coeducational since organization. The faculty is composed of 87 professors and 178 associates, assistants and others, a total of 265. Two years of collegiate work is required for admission. The course covers four years of eight months each. The total fees for each of the four years are, respectively, \$530, \$525, \$520 and \$530. The registration for 1937-1938 was 258; graduates, 58. The next session begins Oct. 2, 1938, and ends June 10, 1939. The Dean is Edward W. Koeh, M.D.

### New York

**COLUMBIA UNIVERSITY COLLEGE OF PHYSICIANS AND SURGEONS**, 630 West One Hundred and Sixty-Eighth Street.—The medical faculty of Columbia College, then known as King's College, was organized in 1767. Instruction was interrupted by the War of the Revolution. The faculty was reestablished in 1792 and merged in 1814 with the College of Physicians and Surgeons, which had received an independent charter in 1807. In 1860 the College of Physicians and Surgeons became the Medical Department of Columbia College. This merger became permanent by legislative enactment in 1891. Columbia College became Columbia University in 1896. The medical school has been coeducational since 1917. The faculty is composed of 212 professors and 500 instructors, demonstrators and others, a total of 712. Three years of collegiate work is required for admission. The work covers four years of eight months each. The total fees for the four years, respectively, are \$545, \$530, \$530 and \$550. The registration for 1937-1938 was 405; graduates, 90. The next session begins Sept. 22, 1938, and ends June 6, 1939. The Dean is Willard C. Rappleye, M.D.

**CORNELL UNIVERSITY MEDICAL COLLEGE**, 1300 York Avenue.—The first year was given at New York and Ithaca but beginning with the session 1938-1939 the entire course will be given in New York. Organized in 1898. Coeducational since organization. The faculty is composed of 120 professors and 288 assistants, lecturers, instructors and others, a total of 408. All candidates for admission must be graduates of approved colleges or scientific schools, or seniors of approved colleges that will permit them to substitute the first year of this medical school for the fourth year of their college course and will confer on them the baccalaureate degree on the completion of the first year's work. The fees for each of the four years are, respectively, \$510, \$500, \$510 and \$525. The registration for 1937-1938 was 283; graduates, 66. The next session begins Sept. 21, 1938, and ends June 7, 1939. The Dean is William S. Ladd, M.D.

**NEW YORK MEDICAL COLLEGE AND FLOWER HOSPITAL**, Fifth Avenue at 105th Street.—Organized in 1858. Incorporated in 1860 as the Homeopathic Medical College of the State of New York. The title New York Homeopathic Medical College was assumed in 1869; the title New York Homeopathic Medical College and Hospital in 1887; the title New York Homeopathic Medical College and Flower Hospital in 1903; present title May 11, 1936. The first class graduated in 1861. Coeducational since 1919. A baccalaureate degree or its equivalent required for admission. The course covers four years of eight months each. It has a faculty of 69 professors and associate professors, 22 assistant professors and 217 lecturers and assistants, a total of 308. The total fees for the four years are, respectively, \$645, \$635, \$635 and \$665. The registration for 1937-1938 was 268; graduates, 57. The next session begins Sept. 19, 1938, and ends June 6, 1939. The Dean is Claude A. Burrett, M.D.

**NEW YORK UNIVERSITY COLLEGE OF MEDICINE**, 477 First Avenue.—Organized in 1898 by the union of the New York University Medical College, organized in 1841, and the Bellevue Hospital Medical College, organized in 1861. Named University and Bellevue Hospital Medical College from 1898 to February 1935 when it was changed to New York University College of Medicine. First class graduated in 1899. Coeducational since 1919. The faculty is composed of 136 professors, associate, assistant, clinical and assistant clinical professors, and 312 lecturers, instructors and others, a total of 448. The course covers four years. Entrance requirements are that all candidates must be graduates of approved colleges or scientific schools, or seniors in good standing in approved colleges or scientific schools on condition that their faculty will permit them to substitute the first year in the New York University College of Medicine for the fourth year of their college course and will confer the bachelor's degree on the satisfactory completion of the year's work. The fees for each of the four years is \$600. The next session begins Sept. 14, 1938, and ends June 7, 1939. The registration for 1937-1938 was 496; graduates, 124. The Dean is Currier McEwen, M.D.

### Rochester

**UNIVERSITY OF ROCHESTER SCHOOL OF MEDICINE**, Elmwood Avenue and Crittenden Boulevard.—Organized in 1925 as the Medical Department of the University of Rochester. Coeducational since organization. The faculty is composed of 60 professors, 175 lecturers, assistants, instructors and others, a total of 235. The work embraces a graded

course of four years of nine months each. Three years of collegiate work is required for admission. The total fees for each year are \$500. The registration for 1937-1938 was 177; graduates, 39. The next session begins Sept. 19, 1938, and ends June 17, 1939. The Dean is George Hoyt Whipple, M.D.

### Syracuse

**SYRACUSE UNIVERSITY COLLEGE OF MEDICINE.**—Organized in 1872, when the Geneva Medical College, chartered in 1834, was removed to Syracuse, under the title "The College of Physicians and Surgeons of Syracuse University." Present title assumed in 1875, when a compulsory three-year graded course was established. The first class graduated in 1873 and a class graduated each subsequent year. In 1889 the amalgamation with the university was made complete. Course extended to four years in 1896. Coeducational since organization. The faculty is composed of 46 professors and 160 associate and assistant professors, lecturers and instructors, a total of 206. Three years of a recognized college course is required for admission. The course covers four years of thirty-four weeks each. The fee for each of the first three years is \$500; for the fourth year, \$510. The enrolment for 1937-1938 was 176; graduates, 36. The next session begins Sept. 22, 1938, and ends June 5, 1939. The Dean is H. G. Weiskotten, M.D.

## NORTH CAROLINA

### Chapel Hill

**UNIVERSITY OF NORTH CAROLINA SCHOOL OF MEDICINE.**—Organized in 1890. Until 1902 this school gave only the work of the first two years, when the course was extended to four years by the establishment of a department at Raleigh. The first class graduated in 1903. A class was graduated each subsequent year, including 1910, when the clinical department at Raleigh was discontinued. Coeducational since 1914. Three years of collegiate work is required for admission. The B.S. degree in medicine is conferred at the end of the first year. The faculty is composed of 14 professors and 7 instructors, a total of 21. The fees for each year are \$295 for residents; nonresidents, an additional fee of \$100. The registration for 1937-1938 was 65. The next session begins Sept. 15, 1938, and ends June 6, 1939. The Dean is Wm. deB. MacNider, M.D.

### Durham

**DUKE UNIVERSITY SCHOOL OF MEDICINE.**—Organized in 1925. The first class was admitted, Oct. 1, 1930. Coeducational. The faculty is composed of 11 professors and 106 associate and assistant professors, lecturers, instructors and assistants, a total of 117. The entrance requirements are seventy hours of collegiate work. The academic year consists of four quarters of eleven weeks each. Students either may study four quarters each year after the first year, and if satisfactory will receive the M.D. certificate after three and one quarter calendar years, or three quarters in each year, and if satisfactory will be graduated after four calendar years. The B.S. degree in medicine may be conferred for special work after six quarters. Students are urged to spend three years in hospital or laboratory work after graduation and must give assurance satisfactory to the executive committee that they will spend at least two years. The fees are \$450 for each year of three quarters. The registration for 1937-1938 was 252; graduates, 47. The next session begins Sept. 29, 1938, and ends June 5, 1939. The Dean is Wilburt C. Davison, M.D.

### Wake Forest

**WAKE FOREST COLLEGE SCHOOL OF MEDICAL SCIENCES.**—Organized in 1902. The faculty numbers 11 professors, 2 assistant professors, and 7 instructors, making a total of 20. Coeducational since 1927. The name was changed from the School of Medicine to the School of Medical Sciences in 1937, in view of the fact that it offers only the first two years of the medical course, which is made up largely of the medical sciences. Ninety semester hours of collegiate work is required for admission. Each annual course extends over nine months. The fees for each of the two years are \$300. The registration for 1937-1938 was 41. The next session begins Sept. 14, 1938, and ends May 30, 1939. The Dean is C. C. Carpenter, M.D.

## NORTH DAKOTA

### Grand Forks

**UNIVERSITY OF NORTH DAKOTA SCHOOL OF MEDICINE.**—Organized in 1905. Offers only the first two years of the medical course. Coeducational since organization. Three years' work in a college of liberal arts is required for admission. The B.S. degree in combined arts-medical course is conferred at the end of the second year. The faculty consists of 8 professors and 8 instructors, a total of 16. The fees are \$75 each year for resident students and \$165 for nonresidents. The registration for 1937-1938 was 48. The next session begins Sept. 19, 1938, and ends June 6, 1939. The Dean is H. E. French, M.D.

## OHIO

### Cincinnati

**UNIVERSITY OF CINCINNATI COLLEGE OF MEDICINE.** Eden and Bethesda Avenues. Organized in 1909 by the union of the Medical College of Ohio (founded in 1819) with the Miami Medical College (founded in 1852). The Medical College of Ohio became the Medical Department of the University of Cincinnati in 1896. Under a similar agreement, March 2, 1909, the Miami Medical College also merged with the University when the title of Ohio-Miami Medical College of the University of Cincinnati was taken. Present title assumed in 1915. Coeducational since organization. Candidates for admission to the freshman class must present three years of college preparation of not less than ninety hours. All candidates taking premedical work at the College of Liberal Arts, University of Cincinnati, must sign up for the seven-year combined course, and at the end of one year of satisfactory work in the College of Medicine the B. S. degree is granted by the College of Liberal Arts. The faculty consists of

50 professors and associates, 412 assistants, etc., a total of 462. The course covers four years of eight months each, on the completion of which the M.B. degree is granted. A year's internship in an approved hospital is required, on completion of which the M.D. degree is granted. Beginning with the fall session of 1938-1939 the fees are as follows: For legal residents of Cincinnati, \$450 a year, plus laboratory fees, (\$50 additional for those not legal residents of Cincinnati). The registration for 1937-1938 was 294; graduates, 72. The next session begins Sept. 23, 1938, and ends June 9, 1939. The Dean is Alfred Friedlander, M.D.

## Cleveland

**WESTERN RESERVE UNIVERSITY SCHOOL OF MEDICINE,** 2109 Adelbert Road.—Organized in 1843 as the Cleveland Medical College in cooperation with Western Reserve College. The first class graduated in 1844. It assumed the present title in 1881. In 1910 the Cleveland College of Physicians and Surgeons was merged. Coeducational since 1919. The faculty includes 84 professors and 228 lecturers, assistants and others, a total of 312. The curriculum covers three years of nine months each and one year of ten months. Three years of collegiate work is required for admission and a baccalaureate degree for graduation. The total fees for each of the four years are, respectively, \$442, \$425, \$415 and \$425. The registration for 1937-1938 was 270; graduates, 63. The next session begins Sept. 22, 1938, and ends June 14, 1939. The Dean is Torald Sollmann, M.D.

## Columbus

**OHIO STATE UNIVERSITY COLLEGE OF MEDICINE,** Neil and Eleventh Avenues.—Organized in 1907 as the Starling-Ohio Medical College by the union of Starling Medical College (organized in 1847 by charter granted by the State Legislature changing the name from Willoughby Medical College, which was chartered March 3, 1834) with the Ohio Medical University (organized 1890). In 1914 it became an integral part of the Ohio State University with its present title. Coeducational since organization. The faculty consists of 68 professors, associate and assistant professors, 84 lecturers, instructors, demonstrators and others, a total of 152. Three years of collegiate work is required for admission. The course covers four years of thirty-four weeks each. Tuition fees are \$246, \$231, \$231 and \$231 each year, respectively, for residents of Ohio, and \$150 additional for nonresidents. The registration for 1937-1938 was 331; graduates, 92. The next session begins Oct. 4, 1938, and ends June 12, 1939. The Dean is J. H. J. Upham, M.D.

## OKLAHOMA

### Oklahoma City

**UNIVERSITY OF OKLAHOMA SCHOOL OF MEDICINE.**—Organized in 1900. Gave only the first two years of the medical course at Norman until 1910, when a clinical department was established at Oklahoma City. The first class graduated in 1911. Coeducational since organization. Since September, 1928, the entire course has been given at Oklahoma City. It has a faculty of 29 professors, 30 associate professors, 18 assistant professors, 38 associates, 14 lecturers, 40 instructors, and 16 assistants, a total of 185. Two years of collegiate work is required for admission. The entrance requirement will be raised to three years effective September 1939. The B.S. in medicine degree is conferred at the end of the second year. The course covers four years of nine months each. The total fees for the four years are, respectively, \$128, \$95, \$53 and \$58. For students residing outside of the State of Oklahoma there is an additional fee of \$250 a year. The registration for 1937-1938 was 223; graduates, 52. The next session begins Sept. 19, 1938, and ends June 5, 1939. The Dean is Robert U. Patterson, M.D.

## OREGON

### Portland

**UNIVERSITY OF OREGON MEDICAL SCHOOL,** Marquam Hill.—Organized in 1887. The first class graduated in 1888, and a class graduated each subsequent year except 1898. The Willamette University Medical Department was merged in 1913. Coeducational since organization. It has a faculty of 79 professors and 190 lecturers, assistants and others, a total of 269. Entrance requirements are three years of collegiate work. The course covers four years of thirty-three weeks each. The total fees for the four years are, respectively, \$320, \$315, \$310 and \$316 for residents of Oregon, and \$60 a year additional for nonresidents. The registration for 1937-1938 was 253; graduates, 55. The next session begins Oct. 3, 1938, and ends June 3, 1939. The Dean is Richard B. Dillehunt, M.D.

## PENNSYLVANIA

### Philadelphia

**THE HARNEMANN MEDICAL COLLEGE AND HOSPITAL OF PHILADELPHIA,** 235 North Fifteenth Street.—Organized in 1848 as the Homeopathic Medical College of Pennsylvania. In 1869 it united with the Harnemann Medical College of Philadelphia, taking the latter title. Assumed present title in 1885. The first class graduated in 1849. Two years of collegiate work in a college of arts and science is required for admission. It has a faculty of 90 professors and 125 lecturers, instructors, and others, a total of 215. The work covers four years of eight months each. Fees for each of the four years are, respectively, \$515, \$512, \$512 and \$535. The registration for 1937-1938 was 548; graduates, 129. The next session begins Oct. 3, 1938, and ends June 15, 1939. The Dean is William A. Pearson, M.D.

**JEFFERSON MEDICAL COLLEGE OF PHILADELPHIA,** 1025 Walnut Street.—Organized in 1825 as the Medical Department of Jefferson College, Canonsburg, Pa. It was chartered with its present title in 1838. Classes have been graduated annually beginning 1826. In 1838 a separate university charter was granted without change of title, since which time it has continued under the direction of its own board of trustees. It has a

faculty of 77 professors, associate and assistant professors and 172 associates, lecturers, demonstrators and instructors, a total of 249. Four years of college work and a bachelor's degree are required for admission. The course of study covers four years of eight and one-half months each. The total fees for the four years are, respectively, \$445, \$435, \$425 and \$425. The registration for 1937-1938 was 498; graduates, 134. The next session begins Sept. 20, 1938, and ends June 2, 1939. The Dean is Henry K. Mohler, M.D.

**TEMPLE UNIVERSITY SCHOOL OF MEDICINE**, Broad and Ontario Streets.—Organized in 1901. The first class graduated in 1904. Coeducational since organization. The faculty numbers 33 professors and 196 associates, assistants and others, a total of 229. Three years of collegiate work is required for admission. The fees for each of the four years, respectively, are \$485, \$455, \$435 and \$455. The registration for 1937-1938 was 441; graduates, 113. The next session begins Sept. 21, 1938, and ends June 15, 1939. The Dean is William N. Parkinson, M.D.

**UNIVERSITY OF PENNSYLVANIA SCHOOL OF MEDICINE**, Thirty-Sixth and Pine Streets.—Organized in 1765. Classes were graduated in 1768 and in all subsequent years except 1772 and 1775-1779, inclusive. The original title was the Department of Medicine, College of Philadelphia. The present title was adopted in 1909. It granted the first medical diploma issued in America. In 1916 it took over the Medico-Chirurgical College of Philadelphia to develop it as a graduate school. Coeducational since 1914. The faculty consists of 108 professors, associate and assistant professors, and 346 lecturers, associates, instructors and others, a total of 454. Three years of collegiate work is required for admission. The course covers four years of thirty-three weeks each. The tuition fee is \$500 each year, with a deposit fee of \$15, a general fee including student health of \$15 and a matriculation fee of \$5. The registration for 1937-1938 was 300; graduates, 139. The next session begins Sept. 26, 1938, and ends June 14, 1939. The Dean is William Pepper, M.D.

**WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA**, Henry Avenue and Abbottsford Road, East Falls.—Organized in 1850. Classes were graduated in 1852 and in all subsequent years except 1862. It has a faculty of 48 professors and 69 assistants, lecturers, and others, in all, 117. Three years of collegiate work is required for admission. The curriculum covers four years of eight and one-half months each. Total fees for each of the four years are, respectively, \$440, \$433, \$433 and \$455. The registration for 1937-1938 was 106; graduates, 25. The next session begins Sept. 21, 1938, and ends June 14, 1939. The Dean is Martha Tracy, M.D.

### Pittsburgh

**UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE**, Bigelow Boulevard.—Organized in 1886, as the Western Pennsylvania Medical College and in 1908 became an integral part of the University of Pittsburgh, removing to the university campus in 1910. The first class graduated in 1887. Coeducational since 1899. The faculty is composed of 29 professors and 282 associates, assistants and others, a total of 311. Entrance requirements are two years of collegiate work. The course of study is four years of eight months each. The total fees for the four years, respectively, are \$500, \$485, \$485 and \$500. The registration for 1937-1938 was 230; graduates, 61. The next session begins Sept. 19, 1938, and ends June 14, 1939. The Acting Dean is W. S. McElroy, M.D.

## SOUTH CAROLINA

### Charleston

**MEDICAL COLLEGE OF THE STATE OF SOUTH CAROLINA**, 16 Lucas Street.—Organized in 1823 as the Medical College of South Carolina. The first class graduated in 1825. In 1832 a medical college bearing the present title was chartered and the two schools continued as separate institutions until they were merged in 1838. Classes were graduated in all years except 1862 to 1865, inclusive. In 1913, by legislative enactment, it became a state institution. Coeducational from 1895 to 1912, when privileges for women were withdrawn, being restored in 1917. It has a faculty of 41 professors and 37 lecturers, instructors and others, a total of 78. The course covers four years of eight months each. Three years of collegiate work is required for admission. The total fees are \$270 each year. Fees for nonresidents of the state, \$420 each year. The enrollment for 1937-1938 was 164; graduates, 42. The next session begins Sept. 22, 1938, and ends June 1, 1939. The Dean is Robert Wilson, M.D.

## SOUTH DAKOTA

### Vermilion

**UNIVERSITY OF SOUTH DAKOTA SCHOOL OF MEDICAL SCIENCES**.—Organized in 1907. Coeducational since organization. Offers only the first two years of the medical course. Three years' work in a college of liberal arts is required for admission. Students who complete the third year of premedical work in the College of Arts and Sciences at the University of South Dakota may apply the work of the first year of medicine to the A.B. degree. The B.S. degree is conferred at the end of the second year on those students who do not hold a previous Bachelor's degree. The faculty numbers 14. The tuition is \$100 each year for residents and \$200 for nonresidents. The registration for 1937-1938 was 31. The next session begins Sept. 14, 1938, and ends June 5, 1939. The Dean is Joseph C. Ohlmacher, M.D.

## TENNESSEE

### Memphis

**UNIVERSITY OF TENNESSEE COLLEGE OF MEDICINE**, 874 Union Avenue.—Organized in 1876 at Nashville as Nashville Medical College. First class graduated 1877, and a class graduated each subsequent year. Became Medical Department of University of Tennessee in 1879. In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee. This union was dissolved in 1911. The trustees

of the University of Nashville by formal action of that board named the University of Tennessee College of Medicine as its legal successor. In 1911 it moved to Memphis, where it united with the College of Physicians and Surgeons. The Memphis Hospital Medical College was merged in 1913. Lincoln Memorial University Medical Department was merged in 1914. Coeducational since 1911. The faculty includes 101 professors and 136 assistants, instructors and others, a total of 237. Two years of collegiate work is required for admission. The B.S. degree in medicine is conferred at the end of the second year. The fees are \$120 quarterly. For residents of the state the charge is reduced \$50 each quarter. The registration for 1937-1938 was 437; graduates, 105. During the academic year of 1938-1939 the quarters begin July 6, Sept. 22, Dec. 30 and March 20, and end Sept. 21, Dec. 14, March 18 and June 10. The Dean is O. W. Hyman, Ph.D.

## Nashville

**MEHARRY MEDICAL COLLEGE**, Eighteenth Avenue North and Jefferson Street. (For Negro Youth).—This school was organized in 1876 as the Meharry Medical Department of Central Tennessee college, which became Walden University in 1900. First class graduated in 1877. Obtained new charter independent of Walden University in 1915. Coeducational since 1876. The faculty is made up of 32 professors and 25 instructors, demonstrators, lecturers and others, 57 in all. Two years' work in a college of liberal arts is required for admission. The curriculum covers four years of thirty-two weeks each. Tuition fees are, respectively, \$295, \$275, \$275 and \$285 each year. The registration for 1937-1938 was 206; graduates, 35. The next session begins Oct. 1, 1938, and ends June 2, 1939. Dean is Edward L. Turner, M.D.

**VANDERBILT UNIVERSITY SCHOOL OF MEDICINE**, Twenty-First Street at Edgehill.—This school was founded in 1874. The first class graduated in 1875. Coeducational since September 1925. The faculty numbers 223. For matriculation, students must be graduates of collegiate institutions of recognized standing or seniors in absentia, who will receive the bachelor degree from their college after having completed successfully at least one year of work in the school of medicine. The course covers four years of nearly nine months each. The total fees for the four years, respectively, are \$415, \$415, \$415 and \$420. The registration for 1937-1938 was 199; graduates, 48. The next session begins Sept. 27, 1938, and ends June 14, 1939. The Dean is Waller S. Leathers, M.D.

## TEXAS

### Dallas

**BAYLOR UNIVERSITY COLLEGE OF MEDICINE**, 810 College Avenue.—Organized in 1900 as the University of Dallas Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University. It acquired the charter of Dallas Medical College in 1904. Coeducational since organization. The first class graduated in 1901. The faculty consists of 99 professors and 95 instructors and assistants, a total of 194. Entrance requirements are two years of collegiate work. The course covers four years of eight months each. The fees for each of the four years, respectively, are \$364, \$354, \$349 and \$374. The registration for 1937-1938 was 302; graduates, 73. The next session begins Oct. 1, 1938, and ends June 5, 1939. The Dean is W. H. Monrond, M.D.

### Galveston

**UNIVERSITY OF TEXAS SCHOOL OF MEDICINE**, 912 Avenue B.—Organized in 1891. The first class graduated in 1892. Coeducational since organization. It has a faculty of 41 professors and 16 lecturers and instructors, a total of 57. The curriculum covers four years of eight months each. The entrance requirement is three years of collegiate work. The total fees for the four years, respectively, are \$88, \$92, \$100 and \$102. There is a matriculation fee of \$50 for each year. The registration for 1937-1938 was 371; graduates, 80. The next session begins Oct. 1, 1938, and ends May 31, 1939. The Dean is W. S. Carter, M.D.

## UTAH

### Salt Lake City

**UNIVERSITY OF UTAH SCHOOL OF MEDICINE**.—Organized in 1906. Coeducational since organization. Gives only first two years of medical course. Each school year covers thirty-six weeks. Three years of collegiate work is required for admission. The medical faculty consists of 8 professors, 3 instructors, 16 lecturers, demonstrators and fellows and 2 technicians; a total of 29. The fees per year are \$229. There is a non-resident fee of \$25 per quarter. The registration for 1937-1938 was 58. The next session begins Sept. 26, 1938, and ends June 2, 1939. The Dean is L. L. Daines, M.D.

## VERMONT

### Burlington

**UNIVERSITY OF VERMONT COLLEGE OF MEDICINE**, Pearl Street, College Park.—Organized with complete course in 1822. Classes graduated in 1823 to 1836, inclusive, when the school was suspended. It was reorganized in 1853 and classes were graduated in 1854 and in all subsequent years. Coeducational since 1920. It has a faculty of 48 professors and 31 lecturers, instructors, preceptors and others, a total of 79. Two years of collegiate work is required for admission. The course of study covers four years of nine months each. For residents of Vermont the tuition fee is \$300 each session. Nonresidents are charged an additional \$75 each session. A student activity fee of \$30 is charged annually, and a \$25 fee for the doctor's degree. The registration for 1937-1938 was 144; graduates, 38. The next session begins Sept. 16, 1938, and ends June 12, 1939. The Chairman of the Committee of Administration is E. H. Butties, M.D.



## VIRGINIA

## Charlottesville

UNIVERSITY OF VIRGINIA DEPARTMENT OF MEDICINE.—Organized in 1827. Classes were graduated in 1828 and in all subsequent years except 1865. Coeducational since the session of 1920-1921. It has a faculty of 38 professors and 37 lecturers, instructors, assistants and others, a total of 75. Two years of collegiate work is required for admission. For residents of Virginia the total fees for the four years, respectively, are \$414, \$391, \$366 and \$361. Nonresidents are charged an additional \$50 each year. The registration for 1937-1938 was 247; graduates, 56. The next session begins Sept. 15, 1938, and ends June 12, 1939. The Dean is J. Carroll Flippin, M.D.

## Richmond

MEDICAL COLLEGE OF VIRGINIA, Twelfth and Clay Streets.—Organized in 1838 as the Medical Department of Hampden Sydney College. Present title was taken in 1854. In 1913 the University College of Medicine was merged. In 1914 the North Carolina Medical College was merged. Coeducational since 1918. Classes were graduated in 1839 and in all subsequent years. It has a faculty of 68 professors and 107 lecturers, instructors and others, a total of 175. Three years of collegiate work is required for admission. The course covers four years of eight and one-half months each. Total fees for the four years, respectively, are \$338, \$338, \$323 and \$353. Nonresidents are charged an additional \$125 each year. The registration for 1937-1938 was 295; graduates, 76. The next session begins Sept. 6, 1938, for the first year class; Sept. 16, 1938, for all other classes, and ends June 6, 1939. The Dean is Lee E. Sutton Jr., M.D.

## WEST VIRGINIA

## Morgantown

WEST VIRGINIA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1902, gives the first two years of the medical course. Coeducational since organization. Three years of collegiate work is required for admission. The B.S. degree in medicine is conferred at the end of the second year. Session extends through nine months. Faculty numbers 24. Fees for residents of the state, \$254; nonresidents, \$404, each year. The registration for 1937-1938 was 41. The next session begins Sept. 13, 1938, and ends June 3, 1939. The Dean is Edward J. Van Lierc, M.D.

## WISCONSIN

## Madison

UNIVERSITY OF WISCONSIN MEDICAL SCHOOL, 412 North Charter Street.—Organized in 1907. Gave only the first two years of the medical course until 1925, when the clinical years were added. Coeducational since organization. Three years of collegiate work are required for admission. The B.S. degree in medical science is conferred at the end of the first year. It has a faculty of 64 professors and 67 lecturers, instructors and others, a total of 131. The fees for each year are, respectively, \$212, \$192, \$165 and \$110. An additional fee of \$200 each year is charged nonresidents. The registration for 1937-1938 was 298; graduates, 52. The next session begins Sept. 21, 1938, and ends June 19, 1939. The Dean is William S. Middleton, M.D.

## Milwaukee

MARQUETTE UNIVERSITY SCHOOL OF MEDICINE, 561 North Fifteenth Street.—Organized in December, 1912, by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons. Coeducational since organization. It has a faculty of 159. Three years of collegiate work is required for admission. The curriculum covers four years of eight and a half months each, and one year's internship in an approved hospital. The fees for the first year are \$412; for each of the three following years, \$400. The registration for 1937-1938 was 324; graduates, 65. The next session begins Sept. 26, 1938, and ends June 14, 1939. The Dean is Eben J. Carey, M.D.

## CANADA

## Alberta

UNIVERSITY OF ALBERTA FACULTY OF MEDICINE, Edmonton.—Organized in 1913. Coeducational since organization. Has given the complete six-year medical course since 1924. The faculty includes 23 full time and 40 part time professors, instructors, assistants and others, a total of 63. Tuition for the first year is \$150, for the second, third and fourth years, \$215; for the fifth and sixth years, \$225. The registration for 1937-1938 was 221; graduates, 31. The next session begins Sept. 27, 1938, and ends April 30, 1939. The Dean is Allan C. Rankin, M.D.

## Manitoba

UNIVERSITY OF MANITOBA FACULTY OF MEDICINE, Bannatyne Avenue, Winnipeg. Organized in 1883 as Manitoba Medical College; first class graduated in 1886, and a class graduated each subsequent year. The college transferred all its property to the University of Manitoba in 1919 and assumed the present title. Coeducational since organization. The faculty includes 26 professors and 80 instructors and assistants, total of 106. Matriculation requirements include two years of collegiate work in the faculty of arts and science of a recognized university. The course extends over four years of eight months each and a hospital internship. The total fees for the five years, respectively, are \$276, \$271, \$271, \$271 and \$145. The registration for 1937-1938 was 222; graduates 49. The next session begins Sept. 16, 1938, and ends May 18, 1939. The Dean is A. T. Mathers, M.D.

## Nova Scotia

DALHOUSIE UNIVERSITY FACULTY OF MEDICINE, Halifax.—Organized in 1867. Incorporated as the Halifax Medical College in 1875. Reorganized as an examining faculty, separate from the Halifax Medical College, in 1885. In 1911, in accordance with an agreement between the Governors of Dalhousie University and the Corporation of the Halifax Medical College, the work of the latter institution was discontinued and a full teaching faculty was established by the university. First class graduated in 1872. Coeducational since 1871. It has a faculty of 26 professors and 40 demonstrators, lecturers and others, a total of 66. Requires for matriculation two years of arts. The medical course covers four years and a hospital internship of one year. The fees are \$317, \$317, \$317, \$307 and \$307 for each year, respectively; \$250 additional registration fee payable by students outside the British Empire. The registration for 1937-1938 was 178; graduates, 32. The next session begins Sept. 13, 1938, and ends May 16, 1939. The Dean is H. G. Grant, M.D.

## Ontario

QUEEN'S UNIVERSITY FACULTY OF MEDICINE, Kingston.—Organized 1854, first class graduated in 1855, and a class graduated each subsequent year. The faculty numbers 56. The fee for the first year is \$208 and \$230 for each of the other five years. The course covers six years of thirty teaching weeks each. The registration for 1937-1938 was 292; graduates, 54. The next session begins Sept. 29, 1938, and ends May 24, 1939. The Dean is Frederick Etherington, M.D.

UNIVERSITY OF TORONTO FACULTY OF MEDICINE, Toronto.—Organized in 1843 as the Medical Faculty of King's College. Abolished in 1853. Reestablished in 1887. In 1902 it absorbed Victoria University, Medical Department, and in 1903 it absorbed the Medical Faculty of Trinity University. Coeducational since 1903. The course of study covers six years of eight months each. The B.Sc. (Med.) degree is conferred at the end of the third or sixth year. It has a faculty of 71 professors and 363 lecturers, associates and others, a total of 434. The fees are \$201 for the first year; for the second, \$376; \$271 for the third year; \$296 for the fourth and fifth years, and \$328 for the sixth year. The registration for 1937-1938 was 811; graduates, 119. The next session begins Sept. 27, 1938, and ends May 13, 1939. The Dean is W. E. Gallie, M.D.

UNIVERSITY OF WESTERN ONTARIO MEDICAL SCHOOL, Ottawa Avenue, London.—Organized in 1881 as the Western University Faculty of Medicine; first class graduated in 1883, and a class graduated each subsequent year. Present title in 1923. The medical school has been under the control of the Board of Governors of the University of Western Ontario since 1913. Coeducational since 1913. The faculty numbers 88. The course of study covers six years of eight months each. The total fees to residents of Canada for the last four years, respectively, are \$225, \$225, \$233 and \$258. The registration for 1937-1938 was 212; graduates, 33. The next session begins Sept. 19, 1938, and ends May 13, 1939. The Dean is F. J. H. Campbell, M.D.

## Quebec

LAVAL UNIVERSITY FACULTY OF MEDICINE, Quebec.—The Quebec School of Medicine, organized in 1848, became in 1852 the Laval University Faculty of Medicine; first class graduated in 1855, and a class graduated each subsequent year. The faculty numbers 81. The fees for each of the medical years are \$175 for residents of Canada. Nonresidents are charged an extra fee of \$175 each year. The premedical requirement is a B.A. degree or its equivalent. The registration for 1937-1938 was 307; graduates, 41. The next session begins Sept. 20, 1938, and ends May 31, 1939. The Dean is P. C. Dagneau, M.D.

MCGILL UNIVERSITY FACULTY OF MEDICINE, 3640 University Street, Montreal.—Founded in 1823 as Montreal Medical Institution; became the Medical Faculty of McGill University in 1829; first class graduated under the university auspices in 1833. No session between 1836-1839, owing to political troubles. In 1905 it absorbed the Faculty of Medicine of the University of Bishop's College. Coeducational since 1919. Three years of collegiate work is required for admission. The length of the medical course is four years followed by one year of internship. The faculty consists of 55 professors and 161 lecturers and others, a total of 216. The total fees for each of the four medical years are \$393. The registration for 1937-1938 was 477; graduates, 97. The next session begins Sept. 1, 1938, and ends June 1, 1939. The Dean is A. Grant Fleming, M.D.

UNIVERSITY OF MONTREAL FACULTY OF MEDICINE, 1265 St. Denis Street, Montreal.—Organized in 1843 as the Montreal School of Medicine and Surgery. In 1891, by act of Parliament, The Medical Faculty of Laval University (organized in 1878) was absorbed. Present name by act of Parliament in 1920. A class was graduated in 1843 and each subsequent year. Coeducational since 1925. The faculty numbers 125. B.A. or B.S. degree, or equivalent, is a prerequisite to our premedical year, which itself precedes a five year medical course. The total fees for each of the five years respectively are \$246, \$227, \$267, \$240 and \$218. The registration for 1937-1938 was 187; graduates 41. The next session begins Sept. 15, 1938, and ends June 15, 1939. The Director of Studies is George H. Baril, M.D., and the Dean is Albert Le Sage, M.D.

## Saskatchewan

UNIVERSITY OF SASKATCHEWAN SCHOOL OF MEDICAL SCIENCES, Saskatoon.—Organized in 1926. Coeducational. Offers the first two years of the medical course. Students require three more years of medicine for graduation. Two years of collegiate work is required for admission. The B.S. degree in medicine is conferred at the end of the second year. The medical faculty includes 7 professors and 3 lecturers and assistants, a total of 10. The fees are \$150 for each year. The registration for 1937-1938 was 47. The next session begins Sept. 26, 1938, and ends May 12, 1939. The Dean is W. S. Lindsay, M.B.

# HOSPITALS APPROVED FOR TRAINING INTERNS

The following general hospitals containing 227,821 beds are considered in position to furnish acceptable internships for medical graduates. These hospitals are automatically approved for general, or mixed, residency training.

## HOSPITALS, 729. INTERNSHIPS, 7,354

The terms used in the column "Type of Internship" are defined as follows:

1. Rotating internships include services in medicine, surgery, pediatrics, obstetrics and in the clinical and x-ray laboratories.

2. Straight internships are limited to a single field.

3. Mixed internships are those comprising more than one service but which do not include all of the six branches which constitute a rotating internship.

		ABBREVIATIONS															
Army CyCo Corp	United States Army City and County Corporation unrestricted as to profit	Fed Frat Indiv NPAssn Op	Federal Frnternal Individual Nonprofit association Optional	Classification of Patients					Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month	
		Control	Capacity	Frco	Part Pay	Full Pay	Total Patients Treated										
ALABAMA																	
Hillman Hospital	Birmingham	County	474	100			10,537	Mixed	20	24	July	No	Req	28	(c)		
Norwood Hospital	Birmingham	NPAssn	226	6	10	84	5,843	Rotating	4	12	July	No	Req	34		\$25	
Employees' Hospital of the Tennessee Coal, Iron and Railroad Company	Fairfield	NPAssn	310			100	7,510	Rotating	10	12	July	No	Req	38		\$25	
ARIZONA																	
St. Joseph's Hospital	Phoenix	Church	205	10	30	60	7,188	Rotating	6	12	July	No	None	26		\$25	
ARKANSAS																	
Baptist State Hospital	Little Rock	Church	315	15	11	74	4,174	Rotating	4	12	July	(3)	None	20		\$25	
Little Rock City Hospital	Little Rock	City	195	100			2,037	Rotating	5	12	July	No	Req	25		\$25	
St. Vincent's Infirmary	Little Rock	Church	150	11	27	62	4,023	Rotating	3	12	June	No	None	20		\$25	
CALIFORNIA																	
Fresno County General Hospital	Fresno	County	520	93	1		8,056	Rotating	10	12	July	No	Req	30		\$25	
Glendale Sanitarium and Hospital	Glendale	Church	216	1	18	81	3,451	Mixed	4	12	July	No	Req	25	\$22.50(a)		
Loma Linda Sanitarium and Hospital	Loma Linda	Church	121	1	13	86	2,965	Mixed	4	12	July	(4)	Req	21	\$50(a)		
California Hospital	Los Angeles	Church	292	7	62	31	8,316	Rotating	12	12	(1-a)	No	Req	15		\$25	
Cedars of Lebanon Hospital	Los Angeles	NPAssn	283	19	4	77	7,088	Rotating	9	12	July	No	Req	41		\$20	
Los Angeles County Hospital	Los Angeles	County	3,306	100			53,717	Mixed	125	24	July	No	Req	39		\$10	
Presbyterian Hosp.—Olmsted Memorial	Los Angeles	NPAssn	280			100	7,175	Rotating	5	12	July	No	None	18		\$25	
Queen of Angels Hospital	Los Angeles	Church	257	32	33	35	6,546	Rotating	8	12	July	(123)	Req	18		\$20	
St. Vincent's Hospital	Los Angeles	Church	250	5	6	90	6,307	Rotating	5	12	July	No	None	60		\$40	
Santa Fe Coast Lines Hospital	Los Angeles	NPAssn	150				2,302	Rotating	6	12	July	(5)	Req	75		\$25	
White Memorial Hospital	Los Angeles	Church	203	2	38	60	5,233	Rotating	16	12	July	No	Req	42	\$4(a)		
U. S. Naval Hospital	Mare Island	Navy	506	85		12	2,523	Rotating	3	12	July	No	Op	72	(b)		
Alameda County Hospital	Oakland	County	420	100			10,797	Rotating	24	12	July	(6)	Req	50	\$20		
Orange County Hospital	Orange	County	333	92	8		3,496	Rotating	8	12	July	No	Req	59	\$15-20		
Collis P. and Howard Huntington Memorial Hospital	Pasadena	NPAssn	198	5	19	76	5,661	Rotating	5	12	Jan. & July	(7)	Req	60	\$20		
Sacramento County Hospital	Sacramento	County	500	100			7,512	Rotating	10	12	July	No	Req	33	\$25		
San Bernardino County Charity Hosp.	San Bernardino	County	325	100			3,961	Rotating	8	12	July	(4)	Req	28	\$25		
San Diego County General Hospital	San Diego	County	663	100			8,909	Rotating	13	12	July	No	Req	37	\$20		
U. S. Naval Hospital	San Diego	Navy	1,000	100			6,977	Rotating	5	12	Aug.	(8)	Req	84	(b)		
Franklin Hospital	San Francisco	NPAssn	244	1	21	78	4,427	Rotating	9	12	July	No	Req	36	\$25		
French Hospital	San Francisco	Frat	220	1	2	97	3,538	Rotating	7	12	July	No	Req	47	\$20(d)		
Hospital for Children	San Francisco	NPAssn	246	4	15	81	5,669	Rotating	9	12	July	No	Req	47	No		
Mary's Help Hospital	San Francisco	Church	145	6	17	78	4,141	Rotating	5	12	July	No	Req	36	\$25		
Mount Zion Hospital	San Francisco	NPAssn	169	16	10	74	4,012	Rotating	7	12	June	No	Req	54	\$15		
St. Joseph's Hospital	San Francisco	Church	256	3	9	91	7,296	Rotating	5	12	July	No	None	20	\$20		
St. Luke's Hospital	San Francisco	Church	255	8	7	85	5,417	Rotating	4	12	July	No	Op	46	\$15(e)		
St. Mary's Hospital	San Francisco	Church	325	2	20	78	7,439	Rotating	7	12	July	No	Req	24	\$25		
San Francisco Hospital	San Francisco	CyCo	1,566	100			13,276	Rotating	49	12	July	(9)	Req	37	\$10		
Southern Pacific General Hospital	San Francisco	NPAssn	400				5,143	Rotating	15	12	July	(10)	Req	65	\$20		
Stanford University Hospital (including Lane)	San Francisco	NPAssn	324	3	51	46	9,557	Straight	15	12	July	No	Req	46	No		
U. S. Marine	San Francisco	USPHS	478	100			4,606	Rotating	12	12	July	(11)	Op	57	(b)		
University of	San Francisco	State	303	64		36	6,386	Straight	20	12	June	No	Req	69	No		
Santa Clara	San Jose	County	439	100			6,115	Rotating	8	12	July	No	Req	50	\$20(e)		
St. Francis	Santa Barbara	Church	100	13	0	78	1,965	Rotating	4	12	July	(13)	Req	45	\$15		
Santa Barbara	Santa Barbara	NPAssn	210			100	3,371	Mixed	6	12	July	No	None	56	\$20		
Santa Barbara	Santa Barbara	County	245	96	3	1	2,069	Rotating	5	12	July	No	Req	73	\$15		
COLORADO																	
Boulder-Colorado Sanit. and Hosp.	Boulder	Church	107	2	5	93	1,243	Mixed	2	12	July	(14)	Op	33	\$25		
Beth-El General Hospital and Sanit.	Colorado Springs	Church	176	25	25	50	2,347	Rotating	2	12	June	No	None	15	\$20		
St. Francis Hospital and Sanatorium	Colorado Springs	Church	149	1	56	43	1,140	Rotating	2	12	July	No	None	31	\$25		
Colorado General Hospital	Denver	State	160	61	39		3,553	Rotating	12	12	July & Aug.	No	Req	75	\$20		
Denver General Hospital	Denver	CyCo	607	100			17,304	Rotating	15	12	Jan. & July	No	Req	40	\$20		
Mercy Hospital	Denver	Church	225	12	55	33	6,051	Rotating	5	12	July	No	None	25	\$25		
Presbyterian Hospital	Denver	Church	175	3	13	84	5,092	Mixed	4	12	July	No	None	32	\$25		
St. Anthony Hospital	Denver	Church	184	10	62	8	2,931	Rotating	3	12	July	No	None	20	\$25		
St. Joseph's Hospital	Denver	Church	285	35	24	41	5,639	Rotating	5	12	July	No	Req	24	\$25		
St. Luke's Hospital	Denver	Church	249	52	48		6,764	Rotating	8	12	July	No	None	31	\$25		
St. Mary Hospital	Pueblo	Church	165	4	67	29	2,205	Rotating	2	12	July	No	None	37	(f)		
CONNECTICUT																	
Bridgeport Hospital	Bridgeport	NPAssn	400	36		64	10,736	Rotating	10	12	July	No	None	36	\$10		
Bridgeport Hospital	Bridgeport	Church	320	16	49	35	5,953	Rotating	7	12	July	No	Req	22	\$20		
Danbury Hospital	Danbury	NPAssn	161	13	56	31	3,264	Rotating	3	12	July	No	None	45	No		
Hartford Hospital	Hartford	NPAssn	773	4	50	46	17,596	Rotating	24	24	July	No	Req	32	\$10		
Municipal Hospitals	Hartford	City	340	100			5,405	Rotating	10	24	July	No	Req	32	\$10		

Numerical and other references will be found on page 831.

Name of Hospital	Location	Control	Capacity	Classification of Patients			Total Patients Treated	Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
				Free	Part Pay	Full Pay									
CONNECTICUT—Continued															
St. Francis Hospital.....	Hartford.....	Church	496	4	26	70	10,001	Rotating	9	12	July	No	Req	23	\$10
Meriden Hospital <sup>1</sup> .....	Meriden.....	NPAssn	140	8	86	6	2,597	Rotating	4	12	July	No	None	19	\$15(g)
Middlesex Hospital.....	Middletown.....	NPAssn	160	15	43	42	3,433	Rotating	3	12	June & July	No	None	19	\$20(b)
New Britain General Hospital.....	New Britain.....	NPAssn	255	15	63	17	5,603	Rotating	6	12	July	No	Req	15	\$30
Grace Hospital.....	New Haven.....	NPAssn	237	10	45	45	6,721	Rotating	11	24	July	No	Req	29	\$10
Hospital of St. Raphael.....	New Haven.....	Church	277	30	34	36	6,815	Rotating	8	12	July	No	Req	41	\$20
New Haven Hospital <sup>1</sup> .....	New Haven.....	NPAssn	560	34	42	24	8,335	Mix&Str	31	12-20	(1-b)	No	Req	60	No
Lawrence and Memorial Associated Hospitals.....	New London.....	NPAssn	237	25	14	61	3,816	Rotating	4	12	July	No	Req	23	\$22.50
Norwalk General Hospital.....	Norwalk.....	NPAssn	181	15	53	32	3,951	Rotating	4	12	Jan. & July	No	Op	42	\$50
William W. Backus Hospital.....	Norwich.....	NPAssn	150	6	74	20	3,336	Rotating	3	12	July & Sept.	No	Req	27	\$10
Stamford Hospital.....	Stamford.....	NPAssn	260	8	70	22	4,625	Rotating	6	18	Jan. & July	No	Req	15	\$45
St. Mary's Hospital <sup>1</sup> .....	Waterbury.....	Church	264	18	52	30	8,288	Rotating	7	12	July	No	Req	28	\$25
Waterbury Hospital.....	Waterbury.....	NPAssn	315	15	78	7	5,495	Rotating	7	12	July & Oct.	No	Req	36	\$25
DELAWARE															
Delaware Hospital.....	Wilmington.....	NPAssn	225	53	10	37	4,781	Rotating	7	12	July	No	Req	23	\$25
	Wilmington.....	NPAssn	198	35	15	50	4,355	Rotating	6	12	July	No	Req	25	\$25
	Wilmington.....	NPAssn	213	40	2	58	3,109	Rotating	4	12	July	(12)	Req	27	\$15(f)
DISTRICT OF COLUMBIA															
Central Disp. and Emergency Hosp...	Washington.....	NPAssn	280	17	10	73	7,953	Mixed	13	12	June	No	Req	37	\$10
Freedmen's Hospital <sup>1</sup> (col.).....	Washington.....	Fed	376	85	15	55	5,333	Rotating	25	12	July & Oct.	No	Req	41	\$10
Gallinger Municipal Hospital <sup>1</sup> .....	Washington.....	City	1,236	99		1	17,653	Rotating	24	12	July	(15)	None	38	\$15
Garfield Memorial Hospital <sup>1</sup> .....	Washington.....	NPAssn	311		25	75	6,691	Mixed	10	12	July	No	Req	42	\$10(b)
Georgetown University Hospital.....	Washington.....	NPAssn	261	6	37	57	6,001	Rotating	11	12	July	(16)	Req	32	\$10
George Washington University Hosp. <sup>1</sup>	Washington.....	NPAssn	114	6	12	83	2,649	Rotating	5	12	July	No	Req	54	\$15
Providence Hospital.....	Washington.....	Church	290	25	40	35	6,622	Rotating	10	24	July	No	Req	24	\$10
St. Elizabeths Hospital, Medical and Surgical Department <sup>1</sup> .....	Washington.....	Fed	450	100			1,600	Rotating	8	24	July & Oct.	(17)	Req	63	(b)
Sibley Memorial Hospital <sup>1</sup> .....	Washington.....	Church	341	6	10	84	10,093	Rotating	7	12	July	No	Req	35	\$20
U. S. Naval Hospital.....	Washington.....	Navy	202	100			1,528	Rotating	..	12	July	No	Op	79	(b)
Washington Sanitarium and Hospital, <sup>1</sup> Takoma Park.....	Washington.....	Church	185	7	28	65	3,019	Rotating	3	12	July	No	Req	41	\$60(a)
FLORIDA															
Duval County Hospital.....	Jacksonville.....	County	240	100			4,401	Rotating	6	12	July	No	Req	54	\$10
St. Luke's Hospital.....	Jacksonville.....	NPAssn	234	20		80	4,304	Rotating	4	12	July	No	None	21	\$25
St. Vincent's Hospital.....	Jacksonville.....	Church	240	33	5	62	4,456	Rotating	4	12	July	No	None	23	\$30
James M. Jackson Memorial Hospital.....	Miami.....	City	500	60		40	12,992	Rotating	10	12	July	No	Req	16	\$20
Tampa Municipal Hospital.....	Tampa.....	City	326	40		60	7,015	Rotating	8	12	July & Sept.	No	Req	17	\$25
GEORGIA															
Georgia Baptist Hospital.....	Atlanta.....	Church	184	11	17	72	6,539	Mixed	6	12	July	(18)	None	19	\$30
Grady Hospitals.....	Atlanta.....	City	613	100			20,948	Rotating	45	12	June	No	Req	32	\$15
Piedmont Hospital.....	Atlanta.....	Corp	135			100	3,373	Rotating	5	12	July	No	None	26	\$25
University Hospital <sup>1</sup> .....	Augusta.....	City	367	44	7	49	8,266	Rotating	12	12	July	No	Req	32	\$10(e)
Emory University Hospital.....	Emory University	NPAssn	237	5	10	85	5,388	Rotating	7	12	July	(19)	None	31	\$30
Macon Hospital.....	Macon.....	CyCo	202	72		28	4,621	Rotating	6	12	July	No	Req	21	\$25
ILLINOIS															
Alexian Bros. Hosp. (male patients only)	Chicago.....	Church	257	10	26	64	3,078	Rotating	7	12	July	(20)	None	20	\$30
American Hospital <sup>1</sup> .....	Chicago.....	NPAssn	170	22	8	70	2,660	Rotating	4	12	July	No	Op	29	No
Augustana Hospital.....	Chicago.....	Church	350	16	30	54	5,318	Mixed	10	18	Jan. & July	No	Op	23	No
Chicago Memorial Hospital.....	Chicago.....	NPAssn	108	30	55	12	2,786	Rotating	5	12	(1-e)	No	Req	52	\$25
Columbus Hospital.....	Chicago.....	Church	174	11	65	24	3,471	Rotating	4	12	July	No	None	65	\$25
Edgewater Hospital.....	Chicago.....	NPAssn	135	14	11	75	4,292	Mixed	5	12	July	No	None	31	\$10
Englewood Hospital.....	Chicago.....	NPAssn	126	10	30	60	3,407	Rotating	4	12	Jan. & July	No	Req	26	\$35
Evangelical Hospital.....	Chicago.....	Church	235	15	35	50	7,338	Mixed	6	12	July	No	None	19	\$25
Garfield Park Community Hospital.....	Chicago.....	NPAssn	182	5	44	51	4,456	Rotating	6	12	July	No	None	19	No
Grant Hospital.....	Chicago.....	NPAssn	291	4	8	88	6,005	Rotating	9	12	July	No	Req	31	No
Henrotin Hospital <sup>1</sup> .....	Chicago.....	NPAssn	124	5	66	29	2,888	Mixed	6	12	Jan. & July	No	Op	15	No
Holy Cross Hospital.....	Chicago.....	Church	169	30	20	50	4,977	Rotating	5	12	July	No	None	34	\$15
Hospital of St. Anthony de Padua.....	Chicago.....	Church	240	12	10	78	5,768	Rotating	4	14	(1-d)	No	None	25	\$10(j)
Illinois Central Hospital.....	Chicago.....	NPAssn	275	32	63	55	5,337	Rotating	8	12	(1-e)	No	Req	22	No
Illinois Masonic Hospital <sup>1</sup> .....	Chicago.....	Frat	184	29		71	2,916	Rotating	6	12	Jan. & July	No	Req	31	No
Jackson Park Hospital.....	Chicago.....	Corp	265	18	3	79	4,042	Rotating	7	12	Feb. & July	No	Req	27	\$10
Lake View Hospital.....	Chicago.....	Corp	140	2	5	93	1,827	Rotating	4	12	July	No	None	..	\$25
Lutheran Deaconess Home and Hosp.	Chicago.....	Church	218	4	16	80	5,244	Mixed	6	12	July	No	None	23	\$15
Lutheran Memorial Hospital <sup>1</sup> .....	Chicago.....	Church	215	5	10	85	3,598	Mixed	4	12	July	No	None	20	\$25
Mercy Hospital.....	Chicago.....	Church	324	16	14	70	6,518	Rotating	12	12	July	No	Req	27	No
Michael Reese Hospital <sup>1</sup> .....	Chicago.....	NPAssn	736	41	36	23	17,830	Rotat&Str	17	12&24	Jan. & July	(21)	Op	50	No
Mother Cabrini Memorial Hospital.....	Chicago.....	Church	140	25	60	15	3,250	Rotating	4	12	July	No	None	35	\$25
Mount Sinai Hospital.....	Chicago.....	NPAssn	230	23	8	69	6,520	Rotating	12	24	June	(21)	Req	28	No
Norwegian-American Hospital <sup>1</sup> .....	Chicago.....	NPAssn	168	5	95	25	2,405	Rotating	6	12	July	No	Req	34	\$20
Passavant Memorial Hospital.....	Chicago.....	NPAssn	212	7	2	91	4,637	Mixed	6	12	(1-e)	No	Req	54	No
Presbyterian Hospital <sup>1</sup> .....	Chicago.....	Church	440	22	46	32	11,188	Mix&Str	26	12-20	(1-d)	No	Op	62	No
Ravenswood Hospital.....	Chicago.....	NPAssn	169	63	4	33	3,481	Rotating	7	12	July & Sept.	No	Req	44	\$10
Research and Educational Hospital <sup>1</sup> .....	Chicago.....	NPAssn	204	1	8	91	6,015	Rotating	7	12	July	No	None	37	\$25
Roseland Community Hospital.....	Chicago.....	State	428	100			6,079	Rotating	12	18	Jan. & July	No	Op	85	No
St. Anne's Hospital.....	Chicago.....	Corp	124	10	15	75	3,456	Rotating	4	12	July	No	Req	28	\$15
St. Bernard's Hospital.....	Chicago.....	Church	300	5	42	53	7,824	Rotating	8	12	July	No	Req	18	No
St. Elizabeth Hospital.....	Chicago.....	Church	233	12	14	74	6,976	Rotating	6	12	July	No	None	25	No
St. Joseph Hospital.....	Chicago.....	Church	340	5	15	80	6,345	Rotating	7	12	July	No	Req	28	No
St. Luke's Hospital.....	Chicago.....	Church	230	9	26	55	5,327	Rotating	8	12	Apr. & July	No	Req	25	No
St. Mary of Nazareth Hospital.....	Chicago.....	NPAssn	626	6	4	99	12,663	Rotating	24	12	(1-f)	No	Req	21	No
St. Mary of Nazareth Hospital.....	Chicago.....	Church	220	17	9	74	6,575	Rotating	7	12	July	No	None	25	No
South Shore Hospital.....	Chicago.....	Corp	125				2,477	Rotating	4	12	July & Sept.	No	None	23	\$10
Swedish Covenant Hospital <sup>1</sup> .....	Chicago.....	Church	202	1	55	44	4,355	Rotating	6	12	July	No	None	37	\$20
U. S. Marine Hospital.....	Chicago.....	USPHS	265	100			2,071	Mixed	6	12	July	(22)	Op	63	(b)
University Hospital.....	Chicago.....	Corp	121	3	5	52	2,633	Rotating	4	12	July	No	Req	28	\$15
University of Chicago Clinics <sup>1</sup> .....	Chicago.....	NPAssn	357	28	45	14	6,835	Straight	18	12	Jan. & July	No	Req	71	No
Washington Boulevard Hospital.....	Chicago.....	NPAssn	110	5	10	85	2,077	Mixed	6	18	(1-c)	No	Req	40	No
Wesley Memorial Hospital <sup>1</sup> .....	Chicago.....	Church	265	23	13	64	3,181	Rotating	5	12	Jan. & July	No	None	47	No
Willard Hospital <sup>1</sup> .....	Chicago.....	NPAssn	140	2	86	12	3,627	Rotating	6	12	Jan. & July	No	None	40	No
Women and Children's Hospital <sup>1</sup> .....	Chicago.....	NPAssn	150	15	20	55	2,708	Rotating	6	12	Jan. & July	No	Req	67	No
Woodlawn Hospital.....	Chicago.....	NPAssn	112	1	67	32	3,233	Rotating	4	12	Jan. & July	No	None	26	\$25

Numerical and other references will be found on page 831.

Name of Hospital	Location	Control	Capacity	Classification of Patients			Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month	
				Free	Part Pay	Full Pay									
ILLINOIS—Continued															
St. Mary's	East St. Louis	Church	295	25	20	55	4,863	Rotating	5	12	July	No	None	35	\$25
Evanston	Evanston	NPAssn	260	10	46	44	8,604	Rotating	16	16	(1-d)	No	Req	79	No
St. Francis	Evanston	Church	353	9	43	48	7,318	Rotating	9	12	July	No	None	26	\$20
Little Company of Mary Hospital	Evergreen Park	Church	194	6	18	76	6,144	Rotating	5	12	July	No	None	20	\$25
St. Joseph's Hospital	Joliet	Church	220	12	9	79	5,124	Rotating	4	12	July	No	None	16	\$25
Oak Park Hospital	Oak Park	Church	165	4	5	91	4,429	Rotating	6	12	July	No	Req	19	No
West Suburban Hospital	Oak Park	NPAssn	427	6	23	71	8,264	Rotating	12	12	(1-g)	No	Req	31	No
St. Francis Hospital	Peoria	Church	397	4	17	79	9,935	Rotating	6	12	Jan. & July	No	None	21	\$20
St. Mary Hospital	Quincy	Church	215	44	39	17	4,191	Rotating	3	12	July	No	None	17	\$25
St. Anthony's Hospital	Rock Island	Church	163	25	40	35	2,486	Mixed	2	12	July	No	Op	25	\$25
INDIANA															
St. Catherine's Hospital	East Chicago	Church	250	8	10	82	5,700	Rotating	7	12	July	No	Op	15	\$25
Lutheran Hospital	Fort Wayne	Church	165	8	8	84	3,364	Mixed	3	12	July	No	None	16	\$25(k)
St. Joseph Hospital	Fort Wayne	Church	285	15	44	41	5,623	Rotating	5	12	July	No	Op	31	\$25
St. Mary's Mercy Hospital	Gary	Church	260	2	18	80	7,023	Rotating	6	12	June	No	None	17	\$25
St. Margaret's Hospital	Hammond	Church	250	1	75	24	5,129	Rotating	8	12	July & Sept.	No	Req	16	\$20
Indianapolis City Hospital	Indianapolis	City	672	88	8	4	10,647	Rotating	32	24	July	No	Req	478	\$10.42,29.33
Indiana University Hospitals	Indianapolis	State	501	82	3	15	9,421	Rotating	23	12	July	No	Req	58	\$12.50
Methodist Episcopal Hospital	Indianapolis	Church	564	11	89	22,200	Rotating	19	12	July	No	Op	23	\$10	
St. Vincent's Hospital	Indianapolis	Church	298	20	17	63	7,105	Mixed	10	12	July	No	None	13	\$15
	La Fayette	Church	215	16	71	13	4,811	Rotating	6	12	July	No	None	18	\$20
	Muncie	NPAssn	238				4,618	Mixed	6	12	July	No	None	37	\$20
	South Bend	NPAssn	192	13	87	4,795	Mixed	4	12	July	No	Req	27	\$27	
St. Joseph's Hospital	South Bend	Church	147	39	27	34	2,710	Mixed	2	12	July	No	Req	39	\$25(k)
St. Anthony's Hospital	Terre Haute	Church	199	35	40	25	2,997	Rotating	3	12	July	No	None	18	\$25
IOWA															
Mercy Hospital	Cedar Rapids	Church	145	18	23	59	2,796	Rotating	2	12	July	No	Req	23	\$25
St. Luke's Methodist Hospital	Cedar Rapids	Church	150	21	49	30	3,516	Rotating	3	12	July	No	None	24	\$25
Jennie Edmundson Memorial Hospital	Council Bluffs	NPAssn	131	2	33	65	2,112	Mixed	3	12	July	No	None	36	\$25
Mercy Hospital	Council Bluffs	Church	150	13	79	8	2,951	Rotating	4	12	June	No	None	40	\$25
Mercy Hospital	Davenport	Church	145	12	18	70	2,888	Rotating	2	12	July	No	None	15	\$25
Broadwains, Polk County Public Hosp.	Des Moines	County	147	95	5	4	5,033	Rotating	8	24	July	(23)	Req	33	\$25
Iowa Lutheran Hospital	Des Moines	Church	145	1	4	95	3,265	Rotating	3	24	July	(23)	Req	17	\$25
Iowa Methodist Hospital	Des Moines	Church	271	9	24	67	7,545	Rotating	8	24	July	(23)	Req	44	\$25
	Des Moines	Church	186	4	28	63	4,165	Rotating	6	24	July	(23)	Req	34	\$25
	Iowa City	State	934	86	9	5	20,195	Rotating	20	12	July	No	Req	63	\$100.75
	Sioux City	Church	220	2	11	87	4,453	Rotating	4	12	July	No	Req	32	\$25
KANSAS															
Bethany Methodist Hospital	Kansas City	Church	145	4	11	85	2,554	Rotating	3	12	July	No	None	42	\$25
Providence Hospital	Kansas City	Church	100	10	31	59	2,724	Mixed	2	12	July	No	None	45	\$20
St. Margaret's Hospital	Kansas City	Church	272	30	53	17	4,326	Rotating	6	12	July	No	Req	82	\$15
University of Kansas Hospitals	Kansas City	State	325	66	30	4	5,726	Rotating	9	12	July	(24)	Req	31	\$40
St. Francis Hospital	Wichita	Church	300	15	25	60	6,030	Rotating	6	12	July	(25)	Req	34	\$25
Wesley Hospital	Wichita	Church	237	8	12	80	4,068	Rotating	5	12	July	(26)	Req	34	\$25
Wichita Hospital	Wichita	Church	115	9	12	79	2,416	Mixed	2	12	July	No	Req	37	\$40
KENTUCKY															
	Covington	Church	316	20	52	10	5,164	Rotating	6	12	July	No	Req	20	\$25
	Lexington	Church	215	5	45	50	6,953	Rotating	5	12	July	No	Req	27	\$25
	Lexington	Church	219	2	23	75	6,707	Rotating	5	12	July	No	Req	32	\$25
	Louisville	Church	150	9	41	50	4,160	Rotating	4	12	July	(27)	None	23	\$25
	Louisville	City	586	90	10		11,196	Rotating	18	12	July	(28)	Req	23	\$25.25
	Louisville	NPAssn	150	10	61	29	2,956	Rotating	5	12	July	(27)	Req	19	\$25
	Louisville	Church	163	22	53	25	3,193	Mixed	2	12	July	No	None	21	\$25
	Louisville	Church	350	15	23	62	6,300	Rotating	5	12	July	No	None	20	\$25
	Louisville	Church	155	15	65	20	3,928	Mixed	4	12	July	No	None	16	\$40
LOUISIANA															
Charity Hospital	New Orleans	State	1,737	100			21,210	Rotating	90	12	July	No	Req	55	\$10
Flint Goodridge Hospital of Dillard University (col.)	New Orleans	NPAssn	100	43	20	37	2,118	Rotating	4	12	July	No	Req	15	\$10
Hotel Dieu Sisters Hospital	New Orleans	Church	257	5	21	74	9,434	Rotating	10	12	July	No	None	26	\$20(e)
Mercy Hospital-Soniat Memorial	New Orleans	Church	143	7	6	87	3,025	Rotating	4	12	July	No	Req	24	\$25
Southern Baptist Hospital	New Orleans	Church	222	11	32	57	9,737	Rotating	11	12	July	No	None	42	\$15(e)
Touro Infirmary	New Orleans	NPAssn	440	35	40	25	10,885	Rotating	18	12	July	No	Req	42	(b)
U. S. Marine Hospital	New Orleans	USPHS	572	100			4,800	Rotating	12	12	July	(29)	Op	38	(b)
Highland	Shreveport	Corp	110			100	3,521	Mixed	2	12	July	No	None	20	\$50
North Lot	Shreveport	Corp	110	13		87	2,808	Mixed	2	12	July	No	Req	20	\$20
T. E. Schu	Shreveport	Church	142	25	25	50	3,356	Rotating	2	12	July	No	None	29	\$10
Shreveport	Shreveport	State	840	100			23,304	Rotating	25	12	July	No	None	25	\$50
Tri-State Hospital	Shreveport	Corp	110	2	8	90	3,892	Rotating	3	12	July	No	None	25	\$50
MAINE															
Eastern Maine General Hospital	Bangor	NPAssn	173	20	21	59	4,150	Rotating	4	12	July	No	Req	27	\$25
Central Maine General Hospital	Lewiston	NPAssn	214	20	30	50	3,737	Rotating	4	12	July	No	Op	25	No
St. Mary's General Hospital	Lewiston	Church	162	42	13	45	3,112	Mixed	2	12	July	No	Req	25	No
Molina General Hospital	Portland	NPAssn	291	43	31	26	5,675	Mixed	9	18	June & Dec.	No	Req	25	No
MARYLAND															
Baltimore City Hospitals	Baltimore	City	1,200	99	1		7,657	Rotat & Str	44	12	July	No	Req	39	No
Bon Sec	Baltimore	Church	143	25	12	63	2,974	Rotating	3	12	July	(30)	Req	35	\$25
Church	Baltimore	Church	186	25	57	18	2,872	Rotat & Str	7	12	July	No	Req	44	\$15
Franklin	Baltimore	NPAssn	204	60	22	18	2,636	Rotating	6	12	July	No	None	22	\$12.50(n)
Hospit	Baltimore	NPAssn	128	19	49	32	2,195	Rotating	5	12	July	(31)	Req	21	No
Johns	Baltimore	NPAssn	625	43	25	32	16,336	Straight	66	12	July & Sept.	No	Req	17	\$10
Maryla	Baltimore	Church	261	35	16	49	4,541	Rotating	9	12	July	No	Req	25	No
Mercy Hospital	Baltimore	Church	250	60	13	27	5,178	Rotating	10	12	July	No	Req	16	\$10
Provident Hosp. and Free Disp. (col.)	Baltimore	NPAssn	133	73	3	24	1,843	Rotating	8	12	July & Oct.	(30)	Req	17	No
St. Agnes Hospital	Baltimore	Church	216	32	37	31	3,830	Rotating	5	12	July	No	Req	22	\$10
St. Joseph's Hospital	Baltimore	Church	290	25	11	61	5,722	Rotating	6	12	July	No	Req	24	No
Sinal Hospital	Baltimore	NPAssn	253	37	11	52	5,757	Str & Mix	20	12	July	No	Req	20	\$20
South Baltimore General Hospital	Baltimore	NPAssn	125	46	31	23	2,914	Rotating	6	12	July	No	Req	39	No
	Baltimore	NPAssn	345	16	48	36	6,341	Rotating	16	12	July	(32)	Req	80	(b)
	Baltimore	USPHS	440	100			3,743	Rotating	12	12	July	No	Req	41	No
	Baltimore	State	450	47	22	31	9,046	Rotating	24	24	July	(33)	Req	25	\$15
	Baltimore	Corp	200	36		64	3,440	Rotating	6	12	July				

Name of Hospital	Location	Control	Capacity	Classification of Patients				Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
				Percentage											
				Free	Part Pay	Full Pay	Total Patients Treated								
MASSACHUSETTS															
Beverly Hospital.....	Beverly.....	NPAssn	261	2	58	40	3,939	Mixed	3	12	July-Sept.	No	Req	64	No
Beth Israel Hospital.....	Boston.....	NPAssn	220	30	10	51	6,133	Straight	8	15½&21	(1-h)	No	Req	51	No
Boston City Hospital <sup>1</sup> .....	Boston.....	City	2,614	94	5	1	41,492	Straight	95	12-24	Varies	No	Req	33	No
Carney Hospital.....	Boston.....	Church	210	7	85	8	4,035	Straight	12	12&20	(1-i)	No	Req	21	No
Faulkner Hospital.....	Boston.....	NPAssn	186	15	63	22	3,915	Rotating	3	12	June & Oct.	No	Req	47	No
Long Island Hospital.....	Boston.....	City	616	98	2	2	2,169	Rotating	12	12	(1-j)	No	Req	53	\$25
Massachusetts General Hospital <sup>1</sup> .....	Boston.....	NPAssn	424	44	35	21	7,784	Straight	41	12-25	(1-e)	No	Req	52	No
Massachusetts Memorial Hospitals <sup>1</sup> .....	Boston.....	NPAssn	437	31	39	30	7,544	Rotat&Str	14	16&24	Varies	No	Req	55	No
New England Hospital for Women and Children, <sup>2</sup> Roxbury.....	Boston.....	NPAssn	260	3	2	95	5,279	Rotating	8	12	July & Oct.	No	Req	34	No
Peter Bent Brigham Hospital.....	Boston.....	NPAssn	247	46	54	4	4,714	Straight	21	12-29	(1-k)	(34)	Req	57	No
St. Elizabeth's Hospital, Brighton.....	Boston.....	Church	300	20	30	50	4,812	Mixed	7	21	(1-e)	No	Req	20	No
Brookline Hospital.....	Brookline.....	NPAssn	154	15	77	8	2,746	Rotating	4	12	June-Aug.	No	Req	23	\$10(h)
Cambridge.....	Cambridge.....	City	234	65	5	30	5,723	Rotating	14	22	(1-d)	No	Req	36	No
Cambridge.....	Cambridge.....	NPAssn	267	11	25	64	4,254	Rotating	4	18	(1-e)	(35)	Req	35	No
U. S. Naval Hospital.....	Chelsea.....	Navy	335	100			2,421	Rotating	12-16	12	July	...	None	54	(b)
Union Hospital.....	Fall River.....	NPAssn	202	5	43	52	3,187	Rotating	3	12	July	No	Req	16	\$25
Burbank.....	Fitchburg.....	Corp	220	45	55	4	4,115	Rotating	4	12	July & Oct.	No	Req	19	\$25
Provide.....	Holyoke.....	Church	200	7	58	35	5,599	Rotating	3	12	June	No	None	20	\$25
Lawrence General Hospital.....	Lawrence.....	NPAssn	150	22	2	76	3,032	Rotating	2	12	June	No	Req	24	\$10
Lowell General Hospital.....	Lowell.....	NPAssn	180	9	68	23	2,926	Rotating	2	12	July	No	Req	27	\$25
St. John's.....	Lowell.....	Church	187	10	59	31	3,352	Rotating	4	12	July & Oct.	No	Req	21	(e)
St. Joseph's.....	Lowell.....	Church	122	1	65	34	4,066	Rotating	3	12	Apr. & July	No	Req	23	\$10
Lynn Hospital.....	Lynn.....	NPAssn	218	16	28	56	4,916	Rotating	6	15	Jan. & July	No	Req	26	\$300 yr.
St. Luke's Hospital.....	New Bedford.....	NPAssn	339	11	43	46	6,861	Rotating	6	12	July	No	Req	30	No
Newton Hospital.....	Newton.....	NPAssn	294	25	46	29	5,186	Rotating	6	12	June	No	Req	31	No
House of Mercy Hospital.....	Pittsfield.....	NPAssn	233	6	84	10	3,378	Rotating	3	12	July	No	Req	17	\$40
St. Luke's Hospital.....	Pittsfield.....	Church	189	4	13	83	3,926	Rotating	2	12	June	No	Req	18	\$25
Quincy City Hospital.....	Quincy.....	City	290	10	20	70	6,281	Rotating	6	12	Jan. & July	(36)	Op	44	(1)
Salem Hospital.....	Salem.....	NPAssn	155	23	45	32	4,241	Rotating	4	12	July & Aug.	No	Req	24	\$25
Mersey Hospital.....	Springfield.....	Church	350	4	16	80	6,809	Rotating	6	12	July & Aug.	No	Req	20	\$25
Springfield Hospital.....	Springfield.....	NPAssn	265	7	78	15	6,009	Rotating	9	18	Jan. & July	(37)	Req	20	No
Wesson Memorial Hospital.....	Springfield.....	NPAssn	120	3	22	75	2,483	Rotating	5	18	Jan. & July	(37)	Req	17	\$25
Waltham Hospital.....	Waltham.....	NPAssn	216	19	57	24	3,058	Rotating	4	12	July	No	Req	24	\$15(l)
Memorial Hospital.....	Worcester.....	NPAssn	215	14	4	82	6,381	Rotating	9	18	(1-d)	No	Req	47	No
St. Vincent.....	Worcester.....	Church	230	4	4	92	7,066	Rotating	5	15½	(1-e)	No	Req	22	\$20
Worcester.....	Worcester.....	City	540	56	19	25	9,507	Rotating	18	24	(1-m)	No	Req	45	No
Worcester Hahnemann Hospital.....	Worcester.....	NPAssn	140	3	71	26	2,316	Rotating	3	12	July	No	None	48	\$35
MICHIGAN															
St. Joseph's Mercy Hospital <sup>1</sup> .....	Ann Arbor.....	Church	155	17	42	41	3,336	Rotating	3	12	July	(35)	Req	33	\$25
University Hospital <sup>1</sup> .....	Ann Arbor.....	State	1,302	81	19	21	52,582	Rotat&Mix	34	12	July	No	Req	57	No
Lelia Y. Post Montgomery Hospital.....	Battle Creek.....	Church	157	19	13	68	4,021	Rotating	3	12	July	No	Req	42	\$25
Mersey.....	Bay City.....	Church	160	9	18	73	5,314	Rotating	3	12	July	No	None	19	\$25
City of.....	Detroit.....	City	670	100			21,365	Rotating	27	12	July	(39)	Req	31	\$25
Evange.....	Detroit.....	Church	205	1	17	82	4,230	Rotating	5	12	July	(40)	Req	29	\$15
Grace Hospital <sup>1</sup> .....	Detroit.....	NPAssn	606	27	40	33	15,444	Rotating	26	12	July & Sept.	(39)	Req	28	\$25
Harper Hospital.....	Detroit.....	NPAssn	710	12	29	59	18,803	Rotating	35	12	July	(40)	Req	24	No
Henry J.....	Detroit.....	NPAssn	608	35	65	10,045	Rotating	25	12	Sept.	No	Op	45	\$125(a)	
Provident.....	Detroit.....	Church	409	10	77	13	12,961	Rotating	17	12	July	(41)	None	18	\$20
St. Jose.....	Detroit.....	Church	242	86	13	1	5,498	Rotating	6	12	July	No	Req	24	\$25
St. Mar.....	Detroit.....	Church	364	27	43	30	7,334	Rotating	12	12	July	No	Req	26	\$20
Eloise.....	Eloise.....	County	1,450	98	1	1	7,452	Mixed	25	12	July	(39)	Req	37	\$25
Hurler Hospital <sup>1</sup> .....	Flint.....	City	467				10,300	Rotating	14	12	July	No	None	33	\$20(e)
Grand Rapids.....	Grand Rapids.....	NPAssn	150	20	60	20	3,410	Rotating	6	12	(1-n)	(42)	Req	37	\$20
Grand Rapids.....	Grand Rapids.....	NPAssn	272	15	40	45	5,867	Rotating	7	12	July	(124)	None	30	\$20
Grand Rapids.....	Grand Rapids.....	Church	253	24	5	71	7,073	Rotating	6	12	July	No	Req	26	\$10-30
Highland Park.....	Highland Park.....	City	190	10	90		4,679	Rotating	6	12	July	No	Req	22	\$15
W. A. Foote Memorial Hospital.....	Jackson.....	City	172	2	35	63	4,138	Rotating	4	12	July	(43)	Req	52	\$25
Mersey Hospital.....	Jackson.....	Church	140	3	30	67	3,181	Rotating	2	12	July	(44)	None	23	\$40
Edward W. Sparrow Hospital <sup>1</sup> .....	Lansing.....	NPAssn	155	1	74	25	4,086	Rotating	2	12	July	No	None	31	\$50
St. Lawrence Hospital.....	Lansing.....	Church	178	2	24	74	6,490	Rotating	3	12	July	(45)	None	47	\$50
Hackley Hospital <sup>1</sup> .....	Muskegon.....	NPAssn	125	10	70	20	2,703	Rotating	3	12	July	No	None	26	\$25
Mersey Hospital.....	Muskegon.....	Church	125	23	43	42	4,795	Rotating	2	12	July	No	None	27	\$35
St. Joseph.....	Pontiac.....	Church	200	1	19	80	3,596	Rotating	4	12	July	No	Req	32	\$25
Saginaw.....	Saginaw.....	NPAssn	152	5	18	77	3,566	Rotating	4	12	July	No	Req	27	\$45
St. Mary.....	Saginaw.....	Church	176	26	12	62	4,053	Rotating	3	12	July	No	Req	21	\$15
MINNESOTA															
St. Luke's Hospital.....	Duluth.....	NPAssn	270	20	45	35	6,089	Rotating	8	12	July	(46)	Req	75	\$12.50
St. Mary's Hospital.....	Duluth.....	Church	200	20	45	35	5,343	Rotating	8	12	July	(47)	Req	72	\$12.50
Asbury Hospital <sup>1</sup> .....	Minneapolis.....	Church	140	10		90	3,628	Rotating	3	12	(1-f)	No	None	30	\$25
Fairview Hospital.....	Minneapolis.....	Church	225	10	30	60	4,258	Rotating	4	12	Jan. & July	(48)	Req	35	\$25
Lutheran.....	Minneapolis.....	Church	150	2	12	86	4,009	Rotating	4	12	Jan. & July	No	None	27	\$25
Minneapolis.....	Minneapolis.....	City	681	85	3	12	10,021	Rotating	30	15	Jan. & July	No	Req	50	No
Northwestern Hospital.....	Minneapolis.....	NPAssn	185	10	15	75	7,341	Rotating	4	12	July	No	Op	42	\$25(h)
St. Barnabas Hospital.....	Minneapolis.....	NPAssn	175	1	1	98	5,260	Mixed	3	12	July	No	None	39	\$25
St. Mary's Hospital <sup>1</sup> .....	Minneapolis.....	Church	250	8	28	64	6,645	Rotating	6	12	July & Oct.	(49)	Op	35	\$15(l)
Swedish Hospital.....	Minneapolis.....	NPAssn	267	4	45	52	6,156	Rotating	5	12	(1-f)	No	Req	25	\$25
University Hospitals <sup>1</sup> .....	Minneapolis.....	State	505	12	61	27	9,203	Rotat&Str	24	12&24	July	(50)	Req	70	No
Anker Hospital.....	St. Paul.....	CyCo	900	98	1	1	9,761	Rotating	32	12	July	No	Req	67	No
Bethesda Hospital <sup>1</sup> .....	St. Paul.....	Church	145	1	3	96	4,721	Rotating	4	12	July	(48)	None	26	\$25
Charles T. Miller Hospital.....	St. Paul.....	NPAssn	230	23	36	41	6,103	Rotating	7	12	July	(51)	Req	50	No
Northern Pacific Beneficial Association Hospital.....	St. Paul.....	NPAssn	150			100	2,456	Mixed	2	12	July	No	Req	31	\$25
St. Joseph's Hospital.....	St. Paul.....	Church	282	14	20	66	7,501	Rotating	7	12	July	(45)	None	26	\$25
MISSOURI															
St. Louis County Hospital.....	Clayton.....	County	210	98	1	1	4,231	Rotating	6	12	July	No	Req	52	\$15(l)
Kansas City General Hospital.....	Kansas City.....	City	475	100			10,542	Rotating	24	12	July	No	Req	57	\$20
Kansas City General Hospital No. 2, (col.).....	Kansas City.....	City	274	100			3,496	Rotating	12	12	July	No	Req	49	\$17.50
Memorial Hospital.....	Kansas City.....	NPAssn	150	6	32	62	3,567	Rotating	5	12	July	No	Req	37	\$25
Resenrich Hospital.....	Kansas City.....	NPAssn	225	3	37	59	5,595	Rotating	6	12	July	No	None	19	\$25
St. Joseph Hospital.....	Kansas City.....	Church	256	15	29	63	5,106	Rotating	6	12	July	No	None	73	\$25
St. Luke's Hospital.....	Kansas City.....	Church	223	10	25	65	4,733	Rotating	6	12	July	No	None	73	\$25
St. Mary's Hospital.....	Kansas City.....	Church	115	15	18	67	4,517								



Name of Hospital	Location	Control	Capacity	Classification of Patients			Total Patients Treated	Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
				Free	Part Pay	Full Pay									
MISSOURI—Continued															
Christian Hospital	St. Louis	NP Assn	116	5	5	90	1,902	Mixed	2	12	July	No	None	28	\$100
De Paul	St. Louis	Church	285	22	30	48	6,931	Rotating	8	12	July	No	Req	23	\$15
Evangelical	St. Louis	Church	195	2	5	93	5,651	Rotating	8	12	July	No	None	23	\$150
Homer G.	St. Louis	City	735	100			5,869	Rotating	20	12	July	No	Req	23	\$100
Jewish Hospital	St. Louis	NP Assn	283	25	51	24	6,010	Rotating	11	12	July	(63)	Req	31	\$15
Lutheran Hospital	St. Louis	Church	180	4	22	74	4,270	Rotating	3	12	July	No	None	21	\$15
Missouri Baptist Hospital	St. Louis	Church	500	10	10	80	5,352	Rotating	8	12	July	No	None	21	\$15
St. Anthony's Hospital	St. Louis	Church	225	13	14	73	4,140	Rotating	6	12	July	(54)	Op	19	\$15
St. John's Hospital	St. Louis	Church	318	16	4	80	5,870	Rotating	9	12	July	No	Req	21	\$10
St. Louis City Hospital	St. Louis	City	731	100			18,481	Rotating	60	12	July	(55)	Req	41	\$100
St. Luke's Hospital	St. Louis	Church	207	16	28	56	5,051	Rotating	9	12	July	(56)	Req	49	\$15
St. Mary's Group of Hospitals	St. Louis	Church	705	42	36	22	11,580	Rotating	26	12	July	No	Req	42	\$10
St. Mary's Infirmary (col.)	St. Louis	Church	150	18	62	20	1,507	Rotating	3	12	July	No	None	41	\$10
MONTANA															
Murray Hospital	Butte	Corp	153				100	Mixed	2	12	Jan. & July	No	Req	31	\$10
St. James Hospital	Butte	Church	201	15	35	50	3,014	Rotating	12	12	July	No	Req	28	\$10
NEBRASKA															
Bryan Memorial Hospital	Lincoln	Church	114		8	92	2,410	Mixed	2	12	July	No	None	42	\$15
Lincoln General Hospital	Lincoln	City	170	10	15	75	3,242	Mixed	12	12	July	No	None	39	\$15
St. Elizabeth's Hospital	Lincoln	Church	200	17	61	22	4,455	Mixed	12	12	July	No	None	15	\$15
Bishop Clarkson Memorial Hospital	Omaha	Church	170	5	60	35	3,179	Rotating	11	12	June	No	None	57	\$15
Craigton Memorial St. Joseph's Hosp.	Omaha	Church	405	17	74	9	7,587	Rotating	11	12	July	No	None	43	\$100
Immanuel Deaconess Institute	Omaha	Church	142	6	31	60	3,877	Rotating	4	12	June	No	None	43	\$100
Nebraska Methodist Episcopal Hosp.	Omaha	Church	200	8	23	69	4,211	Rotating	5	12	July	No	None	43	\$15
St. Catherine's Hospital	Omaha	Church	165	11	78	11	2,963	Rotating	4	12	July	No	None	28	\$15
University of Nebraska Hospital	Omaha	State	230	100			3,558	Rotating	12	12	July	No	Req	57	\$15
NEW HAMPSHIRE															
Margaret Pillsbury General Hospital	Concord	NP Assn	130	35	6	59	2,101	Mixed	2	12	June	No	Req	43	\$10
Mary Hitchcock Memorial Hospital	Hanover	NP Assn	200	17	46	37	3,231	Rotating	6	18&21	(1-2)	No	Req	61	\$100 yr.
NEW JERSEY															
Atlantic City Hospital	Atlantic City	NP Assn	276	45	22	33	6,571	Rotating	8	12	July	No	Req	46	\$15
Bayonne Hospital and Dispensary	Bayonne	NP Assn	255	70	5	25	4,153	Rotating	6	18	(1-2)	No	Req	18	\$15
Cooper Hospital	Camden	NP Assn	375	41	21	32	8,305	Rotating	11	12	July	No	Req	34	\$10
West Jersey Homeopathic Hospital	Camden	NP Assn	298	30	21	47	5,091	Rotating	7	12	June	No	Req	26	\$10
East Orange	East Orange	NP Assn	125	15	55	30	3,310	Rotating	3	12	July	No	Req	26	\$15
Elizabeth	Elizabeth	Church	165	36	7	57	2,101	Rotating	3	12	July	(58)	Req	23	\$10
Elizabeth	Elizabeth	NP Assn	239	30	34	36	6,233	Rotating	8	24	July	No	Req	31	\$15
Elizabeth	Elizabeth	Church	250	46	51	4	4,761	Rotating	6	12	July	No	Req	22	\$15
Englewood	Englewood	NP Assn	238	41	45	14	5,252	Rotating	8	12&18	Jan. & July	(59)	Req	19	\$15
Hackensack	Hackensack	NP Assn	280	60	23	17	7,001	Rotating	9	24	July	(60)	Req	15	\$15
Hoboken	Hoboken	Church	460	60	15	25	6,782	Rotating	9	12	July	No	Req	32	\$15
Jersey City	Jersey City	Church	206	19	11	70	4,650	Rotating	9	18	Jan. & July	(60)	Req	15	No
Jersey City	Jersey City	City	400	90	7	3	18,221	Rotating	90	12-24	(1-1)	(61)	Req	15	No
Jersey City	Jersey City	Church	252	26	32	42	3,862	Rotating	8	24	July	(61)	Req	15	No
Long Branch	Long Branch	NP Assn	211	60	15	25	5,019	Rotating	9	18	Jan. & July	(62)	Op	21	\$15
Montclair	Montclair	NP Assn	380	8	44	48	6,166	Rotating	12	24	July	No	Req	43	\$15
Morristown	Morristown	Church	134	26	66	8	2,048	Rotating	3	12	July	No	Req	43	\$10
Morristown Memorial Hospital	Morristown	NP Assn	155	45	17	38	2,296	Rotating	5	12	July-Oct.	(63)	Req	49	\$15
Burlington County Hospital	Mount Holly	NP Assn	141	56	28	36	2,827	Rotating	4	12	July	(63)	Req	21	\$15
Pikins Memorial Hospital	Neptune	NP Assn	194	77	23		4,526	Rotating	7	12	Jan. & July	No	Req	21	\$15
Hospital of St. Barnabas and for Women and Children	Newark	Church	250	10	31	79	2,985	Rotating	5	12	July	No	Req	22	\$15
Newark Beth Israel Hospital	Newark	NP Assn	445	6	30	64	11,765	Rotating	18	18	Jan. & July	No	Req	31	\$15
Newark City Hospital	Newark	City	740	100			16,218	Rotating	24	24	(1-2)	No	None	29	\$15-20
Newark	Newark	NP Assn	161	8	55	37	2,952	Rotating	4	12	July	No	Req	28	\$15
Newark	Newark	Church	125	14	21	62	2,851	Rotating	3	12	July	No	Req	28	\$10
St. John	Newark	Church	317	4	18	78	6,778	Rotating	6	16	July & Sept.	(61)	Req	28	\$10 yr.
St. John	New Brunswick	Church	206	41	13	46	4,553	Rotating	5	12	July & Sept.	No	Req	28	\$15
Orange	Orange	NP Assn	400	21	20	59	7,911	Rotating	3	12	July	No	Req	20	\$15
St. Mary	Orange	Church	150	24	34	42	2,897	Rotating	3	12	July	No	Req	18	\$15
Passaic	Passaic	NP Assn	200	65	15	30	4,258	Rotating	4	12	July	No	Req	40	\$15
St. Mary's Hospital	Passaic	Church	212	20	3	77	5,108	Rotating	4	12	July	No	Req	40	\$15
Nathan and Miriam Barnett Memorial Hospital	Paterson	NP Assn	129	29	25	46	3,006	Rotating	5	12	July & Sept.	No	Req	31	\$15-20
Paterson General Hospital	Paterson	NP Assn	320	37	11	52	6,749	Rotating	8	24	July	No	Op	16	\$12-20
St. Joseph's Hospital	Paterson	Church	457	40	20	40	6,000	Rotating	10	24	July	No	Req	27	\$15
Plainfield	Plainfield	NP Assn	273	33	17	50	6,170	Rotating	6	12	July	No	Req	31	\$10
Tenack	Church	223	40	10	50	3,897	Rotating	6	12	July	No	Req	21	\$15	
Trenton	NP Assn	250	47	53		4,763	Rotating	6	12	July	No	Req	20	\$15	
Trenton	Church	317	42	59	19	5,730	Rotating	8	12	July	No	Req	28	\$15	
Wachawken	NP Assn	146	34	10	56	3,115	Rotating	4	12	July	No	Req	22	\$15	
Wachawken	NP Assn	101	16	55	29	3,671	Rotating	8	12	Jan. & July	(61)	Req	22	\$15	
NEW YORK															
Albany Hospital	Albany	NP Assn	640	2	81	14	11,531	Rotating	24	12&24	July	No	Req	74	(a)
Albany	Albany	NP Assn	136	1	26	73	2,584	Rotating	5	12	July & Sept.	(64)	Req	40	\$15
Memorial Hospital	Albany	Church	155	28	7	65	3,383	Rotating	5	12	July	No	Req	24	(p)
St. Peter's Hospital	Albany	City	500	55	45		8,395	Rotating	10	24	July	No	Req	26	No
Binghamton City Hospital	Binghamton	NP Assn	240	32	13	55	6,368	Rotating	21	12&24	Jan. & July	No	Req	30	\$15
Beth El Hospital	Brooklyn	NP Assn	224	39	3	58	5,012	Rotating	16	24	Jan. & July	No	Op	37	No
Beth Moses Hospital	Brooklyn	NP Assn	410	45	15	40	8,206	Rotating	16	24	July	No	Req	17	No
Brooklyn Hospital	Brooklyn	NP Assn	133	1	22	77	3,101	Rotating	9	24	July	No	Req	22	\$15
Buswick Hospital	Brooklyn	NP Assn	130	1	56	43	2,134	Rotating	3	12	July	No	Req	26	\$15
Caledonian Hospital	Brooklyn	City	409	100			9,266	Rotating	22	24	July	No	Op	52	\$15
Coney Island Hospital	Brooklyn	City	318	100			8,725	Rotating	24	24	July	No	Req	33	\$15
Cumberland Hospital	Brooklyn	City	320	100			9,909	Rotating	16	24	July	(65)	Req	36	\$15
Greenpoint Hospital	Brooklyn	NP Assn	450	22	4	73	9,663	Rotat&Str	12&24	24	July	(65)	Req	31	\$15
Israel Zion Hospital	Brooklyn	NP Assn	600	21	52	15	15,181	Rotating	24	18	Jan. & July	(65)	Req	30	\$15
Jewish Hospital	Brooklyn	City	2,625	100			16,534	Rotat&Str	12&24	24	July	(66)	Req	63	No
Kings Cou	Brooklyn	NP Assn	473	7	36	57	9,145	Rotat&Str	12	24	July	No	Req	23	No
Long Island	Brooklyn	Church	480	10	2	88	9,821	Rotating	14	24	July	No	Req	35	No
Methodist	Brooklyn	Church	201	17	31	52	4,201	Rotating	10	12	July	No	Req	21	No
Norwegian Lutheran Deaconesses Home and Hospital	Brooklyn	Church	313	8	31	61	5,901	Rotating	16	24	July	No	Req	51	No
St. Catherine's Hospital	Brooklyn	Church	334	51	6	43	4,725	Rotating	12	36	July	No	Req	19	No
St. John's Hospital	Brooklyn	Church	306	23	23	52	4,847	Rotating	16	24	July	No	None	19	No
St. Mary's Hospital	Brooklyn	Church	226	28	40	33	3,293	Rotating	6	12	July	No	None	19	No
St. Peter's Hospital	Brooklyn	Church	226	28	40	33	3,293	Rotating	6	12	July	No	None	19	No

Name of Hospital	Location	Control	Capacity	Classification of Patients			Total Patients Treated	Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
				Free	Part Pay	Full Pay									
NEW YORK—Continued															
Trinity Hospital.....	Brooklyn.....	NPAssn	125	63	29	3	2,823	Rotating	12	24	July	No	Req	33	No
U. S. Naval Hospital.....	Brooklyn.....	Navy	484	100			2,333	Rotating	12	12	July	No	None	33	(b)
Wyckoff Heights Hospital.....	Brooklyn.....	NPAssn	200	28	34	33	5,315	Rotating	12	18	Jan. & July	No	Req	18	No
Buffalo City Hospital <sup>1</sup> .....	Buffalo.....	City	1,063	65	30	5	10,532	Rotating	20	12	July	No	Req	34	\$50(a)
Buffalo General Hospital.....	Buffalo.....	NPAssn	465	3	33	64	10,760	Rotating	14	12	July	(67)	Req	40	No
Buffalo Hospital of the Sisters of Charity.....	Buffalo.....	Church	219	2	3	95	3,952	Rotating	12	12	July	(68)	None	22	\$25
Deaconess Hospital.....	Buffalo.....	NPAssn	225	1	40	59	6,001	Rotating	6	12	July	No	None	25	\$25
Mercy Hospital.....	Buffalo.....	Church	193	26	74		3,973	Rotating	6	12	July	No	Req	24	\$20
Millard Fillmore Hospital.....	Buffalo.....	NPAssn	329	17	50	33	6,498	Rotating	7	12	July	No	Req	40	\$15
Mary Imogene Bassett Hospital <sup>1</sup> .....	Cooperstown.....	NPAssn	100	10	90		2,001	Mixed	5	12	July	No	None	59	\$50
Arnot-Ogden Memorial Hospital.....	Elmira.....	NPAssn	213	17	50	33	5,263	Mixed	5	12	July	No	Req	23	\$20(e)
St. Joseph's Hospital.....	Elmira.....	Church	227	8	92		3,640	Rotating	3	12	July	No	None	20	\$25
Ideal Hospital.....	Endicott.....	City	146	2	98		3,221	Rotating	3	12	July	No	None	37	\$10(g)
Flushing Hospital and Dispensary.....	Flushing.....	NPAssn	269	2	27	71	6,402	Rotating	10	24	July	No	Req	26	\$25
Meadowbrook Hospital <sup>1</sup> .....	Hempstead.....	County	263	89	5	6	5,080	Rotating	6	12	July	No	None	52	\$25
Jamaica Hospital.....	Jamaica.....	NPAssn	197	5	32	63	4,355	Rotating	8	18	Jan. & July	No	Req	36	\$15
Mary Immaculate Hospital.....	Jamaica.....	Church	320	7	53	40	5,197	Rotating	16	24	July	No	Req	26	No
Queens General Hospital <sup>1</sup> .....	Jamaica.....	City	696	100			13,426	Rotating	18	24	July	No	Req	63	\$15
Charles S. Wilson Memorial Hospital.....	Johnson City.....	NPAssn	350	2	93		5,663	Rotating	9	24	July	(69)	Req	43	\$50
Kingston Hospital <sup>1</sup> .....	Kingston.....	NPAssn	133	1	74	25	3,082	Rotating	3	12	July	(70)	None	39	\$25(r)
Our Lady of Victory Hospital.....	Lackawanna.....	Church	160	9	24	67	2,464	Rotating	3	12	July	No	Req	17	\$50
St. John's Lang Island City Hospital.....	Long Island City.....	Church	300	6	83	11	6,893	Rotating	16	24	July	No	Req	56	No
Nassau Hospital.....	Manhasset Neck.....	NPAssn	200	14	70	16	4,906	Rotating	4	12	July	No	None	19	\$50
Mount Vernon Hospital.....	Mount Vernon.....	NPAssn	181	17	20	63	4,205	Rotating	6	24	July	No	Req	19	(q)
New Rochelle Hospital.....	New Rochelle.....	NPAssn	147	6	21	73	4,879	Rotating	7	12	July	No	Req	38	\$25
Beekman Street Hospital.....	New York.....	NPAssn	100	13	79	8	5,115	Mixed	9	24	Jan. & July	No	Req	24	\$20
Bellerose Hospital <sup>1</sup> .....	New York.....	City	2,431	100			55,528	Mix & Str	92	12-24	Jan. & July	No	Req	21	\$15
Beth David Hospital.....	New York.....	NPAssn	200	23	28	49	2,151	Rotating	10	24	July	No	Req	38	No
Beth Israel Hospital <sup>1</sup> .....	New York.....	NPAssn	443	45	8	47	7,700	Rotat & Str	23	12-36	(1-c)	No	Op	24	No
Bronx Hospital.....	New York.....	NPAssn	362	24	25	51	11,529	Rotating	16	24	(1-o)	No	Req	36	(h)
Columbus Hospital.....	New York.....	Church	300	13	65	22	5,126	Rotating	10	18	Jan. & July	No	Req	15	No
Flower Hospital-Fifth Avenue Hospital	New York.....	NPAssn	364	5	43	47	8,300	Rotating	24	24	July	No	Req	25	No
Fordham Hospital.....	New York.....	City	600	100			15,157	Rotat & Mix	23	24	(1-p)	No	Op	39	\$15
French Hospital.....	New York.....	NPAssn	300	30	70		4,290	Straight	14	12 & 24	(1-c)	No	Op	31	(r)
Gouverneur Hospital.....	New York.....	City	212	100			3,765	Rotating	16	24	(1-c)	No	Op	29	\$15
Harlem Hospital <sup>1</sup> .....	New York.....	City	642	100			15,890	Rotating	43	24	Jan. & July	No	Req	23	\$15
Hospital for Joint Diseases.....	New York.....	NPAssn	355	52	14	34	5,923	Rotating	12	24	Jan. & July	(71)	Req	26	\$15
Jewish Memorial Hospital.....	New York.....	NPAssn	209	11	54	35	.....	Rotating	13	24	Jan. & July	No	Req	25	No
.....	New York.....	NPAssn	204	47	43	10	4,431	Rotat & Mix	12	12 & 24	Jan. & July	No	Req	36	No
.....	New York.....	NPAssn	154	52	46	2	2,660	Rotating	8	24	Apr. & Oct.	No	Req	25	No
.....	New York.....	NPAssn	603	24	43	33	11,347	Rotating	24	24	Jan. & July	No	Req	42	(s)
.....	New York.....	City	363	97	3		10,593	Rotating	43	12 & 24	Jan. & July	No	Req	31	\$15
.....	New York.....	Corp	225	4	10	86	4,716	Rotatlog	8	18	Jan. & July	No	None	22	(add)
.....	New York.....	City	1,425	100			10,847	Rotating	40	24	July	No	Req	18	\$15
.....	New York.....	Church	313	20	80		5,511	Rotating	8	24	Jan. & July	No	Req	30	\$15
.....	New York.....	NPAssn	712	83	5	7	1,770	Mix & Str	10	12	Jan. & July	No	Req	78	\$25
.....	New York.....	City	539	100			13,711	Rotating	32	24	Jan. & July	No	Req	31	\$15
.....	New York.....	NPAssn	857	55	30	15	15,745	Mix & Str	32	12 & 30	(1-p)	No	Op	52	(t)
.....	New York.....	City	1,030	100			7,839	Rotating	32	24	July	No	Req	39	\$15
.....	New York.....	NPAssn	1,033	23	77		15,367	Straight	35	12	July	(72)	Req	55	No
.....	New York.....	NPAssn	162	44	12	44	3,715	Rotating	6	12	June & Sept.	No	Req	67	\$10
.....	New York.....	NPAssn	366	15	33	52	8,931	Rotating	8	24	(1-c)	No	Req	23	No
.....	New York.....	NPAssn	410	13	3	84	9,554	Mix & Str	12	12 & 24	(1-c)	No	Req	39	No
.....	New York.....	NPAssn	997	30	43	27	19,326	Mix & Str	43	12-25	Varies	No	Req	47	No
.....	New York.....	NPAssn	331	40	38	22	7,499	Mixed	21	12-36	Jan. & July	No	Req	43	No
.....	New York.....	Church	380	42	36	22	5,309	Mixed	8	24	Jan. & July	No	None	18	No
.....	New York.....	Church	475	37	39	24	7,953	Mixed	20	24	Jan. & July	No	Req	36	No
.....	New York.....	Church	465	22	48	30	10,112	Rotating	35	30	Jan. & July	No	Req	26	(r)
.....	New York.....	NPAssn	229	11	40	49	4,766	Rotating	16	24	Jan. & July	No	Req	25	No
.....	New York.....	NPAssn	202	2	51	47	4,775	Rotating	4	12	July	No	Req	21	\$10(h)
.....	New York.....	NPAssn	225	19	81		4,223	Rotating	4	12	July	No	Req	24	\$20(e)
.....	New York.....	NPAssn	271	14	43	43	5,953	Rotating	9	12 & 24	July	No	Req	34	\$10-20
.....	New York.....	NPAssn	375	21	39	40	8,533	Rotating	8	24	July	No	Req	21	\$25
.....	New York.....	Church	225	11	52	37	5,186	Rotating	5	12	July & Sept.	No	Req	57	\$15
.....	New York.....	Church	225	11	52	37	5,186	Rotating	5	12	July	No	Req	26	\$20
.....	New York.....	NP-C7	637	63	20	17	13,550	Straight	32	12	July	No	Req	65	No
.....	New York.....	NPAssn	255	3	15	82	8,339	Rotating	10	12	July	No	Req	22	\$15
.....	New York.....	USPHS	716	100			6,967	Rotating	23	12	July	(73)	Req	62	(b)
.....	New York.....	Church	241	1	65	34	5,937	Rotating	8	24	July	No	Req	18	No
.....	New York.....	Corp	263	2	79	19	5,919	Rotating	7	24	July	No	Req	21	No
.....	New York.....	NPAssn	240	14	69	17	6,313	Rotating	4	12	July	No	None	26	\$25
.....	New York.....	NPAssn	110	16	57	27	2,736	Rotatlog	4	12	July	No	Req	23	No
.....	New York.....	NPAssn	200	2	38	60	5,418	Rotating	9	12 & 24	July & Aug.	(74)	None	33	No
.....	New York.....	Church	231	36	45	19	7,224	Rotating	6	12	July	No	None	20	No
.....	New York.....	NPAssn	270	43	31	26	5,961	Rotating	7	12 & 24	July	(74)	Req	21	No
.....	New York.....	NPAssn	151	4	62	31	3,450	Rotating	4	12	July-Sept.	No	Req	21	\$25(h)
.....	New York.....	Church	291	8	36	56	3,721	Rotating	4	12	July	(64)	Req	17	\$50
.....	New York.....	County	795	66	2	12	5,592	Rotating	24	24	Jan. & July	No	Req	73	(t)
.....	New York.....	Church	126	5	43	52	3,074	Rotating	4	12	July	No	Req	23	\$25
.....	New York.....	NPAssn	200	24	76		4,915	Rotating	5	12	(1-a)	No	Op	34	\$25
.....	New York.....	Church	185	20	12	58	2,573	Rotating	6	18	Jan. & July	No	Req	19	\$15
.....	New York.....	NPAssn	178	25	20	55	2,734	Rotating	4	12	Jan. & July	No	Op	15	(u)
NORTH CAROLINA															
Duke Hospital.....	Durham.....	NPAssn	470	56	33	11	10,954	Straight	33	12	July & Sept.	No	Req	59	No
.....	Durham.....	NPAssn	108	44	19	37	1,375	Rotating	3	12	July	No	Req	21	\$15
.....	Durham.....	NPAssn	225	32	24	43	5,299	Rotating	8	12	July	No	Req	21	\$15
.....	Durham.....	NPAssn	125	14	29	47	2,945	Rotating	4	12	July	No	Req	22	\$25
.....	Durham.....	NPAssn	209	13	25	62	4,619	Rotating	5	12	July	No	Req	17	\$25
.....	Durham.....	Church	100	54	18	25	1,225	Mixed	2	12	July & Sept.	No	Req	26	(h)
.....	Durham.....	NPAssn	120	26	13	61	2,945	Rotating	2	12	July	No	Req	15	\$15
.....	Durham.....	NPAssn	153	42	8	50	3,252	Rotating	4	12	July	No	Req	15	\$25(k)
.....	Durham.....	City	221												

Numerical and other references will be found on page 831.

Name of Hospital	Location	Control	Capacity	Classification of Patients				Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
				Free	Part Pay	Full Pay	Total Patients Treated								
OHIO															
City Hospital	Akron	NPAasn	366	30	7	63	9,422	Rotating	12	12	July	(76)	Req	45	\$12
Peoples Hospital	Akron	NPAasn	156	20		80	4,071	Rotating	4	12	July	(76)	Req	28	\$25
St. Thomas Hospital	Akron	Church	185	20	40	40	4,730	Rotating	4	12	July	No	None	30	\$30
Aultman Hospital	Canton	NPAasn	171	19	56	25	3,867	Rotating	4	12	July	(77)	None	27	\$20
Mersey Hospital	Canton	Church	230	23	28	72	6,515	Rotating	4	12	July	No	Req	32	\$25
Bethesda Hospital	Cincinnati	Church	239	25	30	45	5,933	Rotating	7	12	July	(78)	Req	16	\$25(e)
Christ Hospital	Cincinnati	Church	332	4	41	55	7,520	Rotating	9	12	June	(78)	Req	28	\$22.50
Cincinnati General Hospital	Cincinnati	City	925	57	10	3	15,834	Rotating	40	12	July	(79)	Req	52	No
Deaconess Hospital	Cincinnati	Church	175	5	41	54	4,282	Rotating	6	12	July	(80)	Req	19	\$25
Good Samaritan Hospital	Cincinnati	Church	550	5	66	29	10,708	Rotating	14	12	June	No	None	19	\$15
Jewish Hospital	Cincinnati	NPAasn	262	20	44	36	5,713	Rotating	8	12	July	(81)	None	26	\$20
St. Mary's Hospital	Cincinnati	Church	252	60	31	0	4,551	Rotating	6	12	July	No	None	18	\$25
City Hospital	Cleveland	City	1,579	97	2	1	14,482	Rotating	36	12	July	No	Req	43	No
Fairview Park Hospital	Cleveland	Church	109	16	2	82	3,093	Rotating	5	12	July	No	Req	25	\$20.50
Lutheran Hospital	Cleveland	Church	137	5	40	55	4,255	Rotating	4	12	July	No	None	25	\$25(e)
Mount Sinai Hospital	Cleveland	NPAasn	270	20	11	69	8,270	Rotating	11	12	July	No	Op	28	\$10
St. Alexis Hospital	Cleveland	Church	220	23	1	76	4,591	Rotating	8	12	July	(82)	Req	40	\$10
St. John's Hospital	Cleveland	Church	214	18	5	77	5,579	Rotating	6	12	July	No	None	21	\$10(w)
St. Luke's Hospital	Cleveland	Church	391	18	1	81	11,392	Rotating	18	12	July	No	Req	28	No
St. Vincent Charity Hospital	Cleveland	Church	295	35	1	64	5,879	Rotating	12	12	July	(82)	Req	40	No
University Hospitals	Cleveland	NPAasn	916	35	5	60	18,469	Mix&Str	41	12-24	(1-q)	No	Req	57	(x)
Woman's Hospital	Cleveland	NPAasn	110	6	11	83	2,098	Rotating	3	12	July	No	None	29	\$25
Grant Hospital	Columbus	NPAasn	333	8	47	45	6,639	Rotating	8	12	July	No	None	21	\$25
Mount Carmel Hospital	Columbus	Church	225	20	30	50	4,385	Rotating	6	12	July	(83)	None	33	\$25
St. Francis Hospital	Columbus	State	160	71	16	13	2,988	Rotating	8	12	July	(84)	None	29	\$25 jr.
St. Vincent's Hospital	Columbus	State	288	35	23	42	5,289	Rotat&Str	10	12&24	July	No	Req	50	(y)
St. Vincent's Hospital	Columbus	Church	271	12	88	7,003	Rotating	6	12	July	No	None	32	\$25	
Dayton	Dayton	Church	248	36	10	54	4,425	Rotating	4	12	July	No	None	26	\$25
Dayton	Dayton	NPAasn	375	23	34	43	10,465	Rotating	8	12	July	(85)	None	40	\$25
Dayton	Dayton	Church	400	29	32	39	7,105	Rotating	6	12	July	No	None	23	\$25
Dayton	East Cleveland	NPAasn	256	2	22	76	6,977	Rotating	9	12	July	No	Req	34	\$20
Mersey Hospital	Hamilton	Church	300	25	50	25	3,376	Rotating	2	12	July	No	None	21	\$25
Springfield City Hospital	Springfield	City	298	34	29	37	4,960	Rotating	6	12	July	No	Req	18	\$20
Flower Hospital	Toledo	Church	130	4	30	66	2,688	Rotating	3	12	July	No	None	32	\$25-20
Lucas County General Hospital	Toledo	County	315	100			4,398	Rotating	10	12	July	No	Req	25	\$25
Mersey Hospital	Toledo	Church	140	23	72	5	3,070	Rotating	4	12	July	No	None	33	\$25
St. Vincent's Hospital	Toledo	Church	334	29	34	37	11,286	Rotating	11	12	July	No	Req	30	\$25
Toledo Hospital	Toledo	NPAasn	275	5	58	37	3,793	Rotating	5	12	July	No	None	28	\$25
Women's and Children's Hospital	Toledo	NPAasn	150	6	71	23	2,576	Rotating	3	12	July	No	None	24	\$25
St. Elizabeth's Hospital	Youngstown	Church	259	3	41	56	6,682	Rotating	7	12	July	No	None	15	\$20(e)
Youngstown Hospital	Youngstown	NPAasn	430	25	23	52	9,919	Rotating	14	24	July	No	Op	20	\$20.50
OKLAHOMA															
Oklahoma City General Hospital	Oklahoma City	Corp	112	10	30	60	3,588	Mixed	3	12	July	No	Req	19	\$25
St. Anthony Hospital	Oklahoma City	Church	340	11	49	40	9,076	Rotating	9	12	July	No	None	23	\$15
State University and Crippled Children's Hospitals	Oklahoma City	State	455	71	27	2	6,455	Rotating	20	24	July	No	Req	46	\$10-25
Wesley Hospital	Oklahoma City	Port	160	25	75	4,332	Rotating	5	12	July	No	None	21	\$25	
Morningside Hospital	Tulsa	Corp	255	5	35	60	3,578	Rotating	6	12	July	No	None	18	\$25(h)
St. John's Hospital	Tulsa	Church	285	33	33	34	5,643	Rotating	7	12	July	No	None	23	\$25(e)
OREGON															
Emanuel Hospital	Portland	Church	325	10	10	80	8,537	Rotating	9	12	June	(86)	None	35	\$30
Good Samaritan Hospital	Portland	Church	350	3	5	92	11,149	Rotating	10	12	July	No	None	49	\$10(a)
Port St.	Portland	Church	135	11	28	61	5,112	Rotating	4	12	July	No	None	49	\$25
Univ. Hosp.	Portland	Co-State	422	100			10,406	Rotating	8	12	July	No	None	87	\$25
PENNSYLVANIA															
Ablington Memorial Hospital	Ablington	NPAasn	302	25	20	55*	6,126	Rotating	10	24	July	No	Req	42	No
Allentown Hospital	Allentown	NPAasn	325	45	9	46	7,411	Rotating	10	12	July	No	Req	25	No
Sacred Heart Hospital	Allentown	Church	255	60	3	37	4,486	Rotating	7	12	July	(87)	Req	31	\$25
Altoona Hospital	Altoona	NPAasn	180	41	10	49	3,048	Rotating	5	12	July	No	Req	19	\$25
Mersey Hospital	Altoona	NPAasn	144	34	1	65	3,385	Rotating	5	12	July	No	Req	29	(h)
St. Luke's Hospital	Bethlehem	NPAasn	238	19	24	57	4,046	Rotating	7	12	July	No	Req	26	\$25
Braddock General Hospital	Braddock	NPAasn	142	27	15	58	2,904	Rotating	4	12	July	No	Req	26	No
Braddock General Hospital	Bryn Mawr	NPAasn	264	11	32	57	5,127	Rotating	8	12	July	No	Req	18	\$15
Bryn Mawr Hospital	Chester	NPAasn	285	51	5	44	4,409	Rotating	6	12	July	No	Req	37	No
Chester	Danville	NPAasn	187	27	21	52	5,091	Rotating	10	12	July	No	Req	15	(h)
George F. Fitzgerald	Darby	Church	248	60	19	21	4,263	Rotating	5	12	July	No	Req	20	(h)
Erle	Easton	NPAasn	220	41	6	53	4,595	Rotating	5	12	July	No	Req	15	\$25
Erle	Erle	NPAasn	255	38	16	46	6,147	Rotating	7	12	July	No	Req	15	\$15(e)
Erle	Erle	NPAasn	224	33	67	6,295	Rotating	10	12	July	No	Req	42	\$15	
Harrisburg	Harrisburg	NPAasn	264	42	7	51	6,358	Rotating	8	12	July	No	Req	25	\$25
Harrisburg	Harrisburg	NPAasn	182	41	50	3,744	Rotating	4	12	July	No	Op	22	No	
Johnston	Johnston	NPAasn	335	47	14	38	6,074	Rotating	8	12	July	No	Req	22	No
Lancaster	Lancaster	NPAasn	150	24	10	66	3,218	Rotating	3	12	July	No	Req	49	\$17.50
Lancaster	Lancaster	NPAasn	277	32	3	65	6,122	Rotating	7	12	July	No	Req	34	\$17.50
St. Joseph's Hospital	Lancaster	Church	230	35	25	40	4,174	Rotating	5	12	July	No	Req	21	\$25
St. Joseph's Hospital	McKeesport	NPAasn	283	32	6	62	5,678	Rotating	7	12	July	No	Req	35	\$20
St. Joseph's Hospital	Norristown	NPAasn	110	46	15	39	2,758	Rotating	4	12	July	No	Req	32	\$20
St. Joseph's Hospital	Philadelphia	NPAasn	114	11	20	69	1,854	Rotating	4	12	July	No	Req	18	No
St. Joseph's Hospital	Philadelphia	NPAasn	142	12	18	70	3,458	Rotating	7	12	July	No	Req	39	No
St. Joseph's Hospital	Philadelphia	NPAasn	396	20	30	50	7,301	Rotating	12	24	July	No	Req	39	No
St. Joseph's Hospital	Philadelphia	NPAasn	454	33	31	36	6,804	Rotating	16	24	July	(88)	Req	35	No
St. Joseph's Hospital	Philadelphia	NPAasn	592	31	29	40	11,343	Rotating	24	24	July	(88)	Req	28	No
St. Joseph's Hospital	Philadelphia	Church	530	70	14	16	7,803	Rotating	18	24	Jan. & July	No	Req	60	No
St. Joseph's Hospital	Philadelphia	State	595	28	31	41	11,201	Rotating	28	24	July	No	Req	41	No
St. Joseph's Hospital	Philadelphia	NPAasn	173	18	38	44	3,441	Rotating	6	12	July & Sept.	No	Req	49	No
St. Joseph's Hospital	Philadelphia	NPAasn	688	49	20	31	13,015	Rotating	28	27	June	(89)	Req	46	No
St. Joseph's Hospital	Philadelphia	NPAasn	475	31	15	54	7,050	Rotating	18	24	June	(90)	Req	34	\$10
St. Joseph's Hospital	Philadelphia	NPAasn	296	31	10	59	4,341	Rotating	10	24	July	(91)	Req	21	\$10
St. Joseph's Hospital	Philadelphia	NPAasn	110	44	45	11	2,194	Rotating	5	12	July	No	Req	19	No
St. Joseph's Hospital	Philadelphia	Church	196	43	8	49	4,030	Rotating	8	12	July	No	Req	47	No
St. Joseph's Hospital	Philadelphia	Church	230	20	10	70	4,558	Rotating	9	12	June	No	Req	50	\$20
St. Joseph's Hospital	Philadelphia	NPAasn	316	20	39	41	7,333	Rotating	14	12	July	No	Req	21	\$20
St. Joseph's Hospital	Philadelphia	NPAasn	102	10	18	72	2,572	Rotating	4	12	July	(92)	Req	52	No
St. Joseph's Hospital	Philadelphia	NPAasn	569	28	42	30	8,849	Rotating	24	24	(1-r)	(92)	Req	52	No
St. Joseph's Hospital	Philadelphia	City	2,400	95	4	1	25,845	Rotating	60	24	July	(89)	Req	20	

Name of Hospital	Location	Control	Capacity	Classification of Patients			Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month	
				Free	Part Pay	Full Pay									
PENNSYLVANIA—Continued															
Deebleston Hospital	Philadelphia	Church	356	16	15	69	5,165	Rotating	12	24	July	No	Req	53	No
	Philadelphia	Church	406	28	44	28	7,166	Rotating	12	12	July	No	Req	19	No
	Philadelphia	Church	180	35	20	45	3,165	Rotating	6	12	July	No	Req	20	No
	Philadelphia	NPAasn	232	23	23	52	5,525	Rotating	8	12	July	No	Req	32	No
	Philadelphia	Church	294	65	15	20	4,429	Rotating	7	12	July	No	Req	21	No
	Philadelphia	NPAasn	420	38	50	12	9,631	Rotating	18	24	July	(93)	Req	45	No
	Philadelphia	Navy	650	100			6,200	Rotating	5	12	July	(94)	Op	39	(b)
	Philadelphia	NPAasn	150	43	38	19	3,520	Rotating	6	12	July & Sept.	(95)	Req	48	No
	Philadelphia	NPAasn	200	30	11	50	3,018	Rotating	4	12	July	No	Req	20	\$10
Allegheny General Hospital <sup>1</sup>	Pittsburgh	NPAasn	592	54	5	41	8,233	Rotating	16	12	July	No	Req	25	No
Mersey Hospital <sup>1</sup>	Pittsburgh	Church	670	35	35	30	12,412	Rotating	24	12	July	(97)	Req	24	No
Montefiore Hospital	Pittsburgh	NPAasn	230	37	44	19	6,479	Rotating	9	12	July	No	Req	37	No
Passavant Hospital <sup>1</sup>	Pittsburgh	Church	140	33	7	60	2,819	Rotating	5	12	July	No	Req	26	(i)
Pittsburgh Hospital	Pittsburgh	NPAasn	208	27	6	65	4,168	Rotating	6	12	July	No	Req	26	\$25
Presbyterian Hospital <sup>1</sup>	Pittsburgh	NPAasn	145	42	9	49	2,708	Rotating	18	12	July	(98)	Req	29	No
St. Francis Hospital <sup>1</sup>	Pittsburgh	Church	640	14	16	70	10,459	Rotating	20	12	July	(96)	Req	21	No
St. John's General Hospital	Pittsburgh	NPAasn	202	25	6	69	4,082	Rotating	5	12	July	No	Req	23	No
St. Joseph's Hospital	Pittsburgh	Church	140	27	61	12	2,446	Rotating	4	12	July	No	Req	31	No
St. Margaret Memorial Hospital	Pittsburgh	Church	150	38	36	26	2,581	Rotating	4	12	July	No	Req	40	No
Shadyside Hospital	Pittsburgh	NPAasn	275	30	3	67	5,136	Rotating	8	12	July	(98)	Op	20	No
South Side Hospital	Pittsburgh	NPAasn	225	43	34	23	5,450	Rotating	7	12	July	No	Req	17	No
Western Pennsylvania Hospital <sup>1</sup>	Pittsburgh	NPAasn	661	32	68	11	8,411	Rotating	19	12	July	No	Req	21	No
Pottsville Hospital <sup>1</sup>	Pottsville	NPAasn	150	51	2	47	3,399	Rotating	3	12	July	No	Req	15	\$25
Homoeopathic Med. and Surgical Hosp.	Reading	NPAasn	119	59	3	38	2,567	Rotating	4	12	June	No	Req	20	\$25
Reading Hospital	Reading	NPAasn	289	42	13	45	6,667	Rotating	8	12	July	(99)	Req	25	No
St. Joseph's Hospital	Reading	Church	205	35	3	62	4,229	Rotating	6	12	July	No	Req	44	No
Robert Packer Hospital	Sayre	NPAasn	325	50	5	45	7,309	Rotating	9	12	Jan. & July	No	Req	44	No
Hahnemann Hospital	Seranton	NPAasn	125	54	4	46	3,071	Rotating	4	12	July	No	Req	15	\$12.50
Moses Taylor Hospital	Seranton	NPAasn	125	61	39	2	3,199	Rotating	4	12	July	(100)	Req	36	\$15
Seranton State Hospital	Seranton	State	276	85	3	12	4,406	Rotating	8	12	July	No	Req	27	\$8.33
Valley Hospital	Sewickley	NPAasn	140	24	4	72	3,027	Rotating	4	12	July	No	Req	21	\$25
Uniontown Hospital	Uniontown	NPAasn	225	28	6	66	5,269	Rotating	5	12	July	No	Req	28	\$25
Washington Hospital	Washington	NPAasn	166	25	9	66	3,496	Rotating	5	12	July	No	Req	33	\$25
Chester County Hospital	West Chester	NPAasn	159	31	15	54	3,171	Rotating	4	12	July	No	Req	25	\$25
Mersey Hospital <sup>1</sup>	Wilkes-Barre	Church	220	62	1	37	4,288	Rotating	6	12	July	No	Req	23	(s)
Wilkes-Barre General Hospital	Wilkes-Barre	NPAasn	405	64	3	33	8,635	Rotating	12	12	July	No	Req	30	No
Columbia Hospital <sup>1</sup>	Wilkesburg	Church	213	44	5	51	4,101	Rotating	5	12	July	No	Req	29	\$20
Williamsport Hospital <sup>1</sup>	Williamsport	NPAasn	275	45	5	50	4,900	Rotating	6	12	July	No	Req	29	\$10
Windber Hospital <sup>1</sup>	Windber	NPAasn	117	10	70	20	3,157	Rotating	4	12	July	No	Req	32	\$25
York Hospital	York	NPAasn	209	44	7	49	4,950	Rotating	8	12	July	No	Req	38	\$25
RHODE ISLAND															
Memorial Hospital	Pawtucket	NPAasn	196	42	9	49	3,193	Rotating	6	18	June & Sept.	No	Req	31	No
Homoeopathic Hospital	Providence	NPAasn	200	16	24	60	4,933	Rotating	4	12	July	No	Req	39	\$30
Rhode Island Hospital	Providence	NPAasn	580	39	34	27	10,590	Rotating	27	24	(1-s)	(101)	Req	36	No
St. Joseph's Hospital	Providence	Church	350	43	16	41	4,846	Rotating	7	24	(1-p)	No	Req	23	No
SOUTH CAROLINA															
Roper Hospital	Charleston	NPAasn	300	71	5	24	7,644	Rotating	15	12	July	No	Req	36	\$10
Columbia Hospital <sup>1</sup>	Columbia	County	305	25	12	63	7,131	Rotating	6	12	July & Oct.	No	Req	20	\$15(h)
Greenville General Hospital	Greenville	City	200	46	9	45	4,893	Rotating	5	12	July	(102)	Req	27	\$15(m)
TENNESSEE															
Barcoess Erlanger Hospital	Chattanooga	CyCo	251	5	81	14	7,141	Rotating	12	12	July	(57)	Req	30	\$25
Knoxville General Hospital	Knoxville	City	312	65	35	35	7,160	Rotating	10	18	(1-c)	No	Req	18	\$25
Baptist Memorial Hospital	Memphis	Church	400	27	15	58	14,511	Rotating	14	18	(1-m)	No	None	19	\$25
John Gaston Hospital	Memphis	City	550	97	3	34	14,567	Rotating	24	12	(1-s)	No	Req	21	\$20
Methodist Hospital	Memphis	Church	185	30	15	55	6,456	Mixed	4	12	(1-c)	No	None	33	\$50
St. Joseph's Hospital	Memphis	Church	295	30	45	25	7,173	Rotating	5	12	(1-c)	No	Req	21	\$35
George W. Hubbard Hospital <sup>1</sup> (col.)	Nashville	NPAasn	172	91	9		2,289	Rotating	8	12	July	No	Req	25	\$15(i)
Nashville General Hospital	Nashville	City	305	90	10		6,785	Rotating	11	12	July	No	Req	31	\$20
St. Thomas Hospital	Nashville	Church	225	5	45	50	5,776	Rotating	5	12	July	No	None	24	\$40
Vanderbilt University Hospital <sup>1</sup>	Nashville	NPAasn	210	29	33	38	4,886	Straight	14	12	July	(103)	Op	63	\$23.75
TEXAS															
Baylor University Hospital <sup>1</sup>	Dallas	Church	433	20	20	60	13,757	Rotating	15	12	July	No	Req	34	\$25
Medial Arts Hospital	Dallas	Iodiv	86			100	3,519	Rotating	3	12	July	(104)	None	18	\$35
Methodist Hospital	Dallas	Church	125	3	22	75	3,764	Rotating	4	12	July	No	Req	25	\$25(h)
Parkland Hospital <sup>1</sup>	Dallas	CyCo	387	91	9		8,935	Rotating	12	12	Jan. & July	No	Req	15	\$10
St. Paul's Hospital	Dallas	Church	300	10	15	75	8,947	Rotating	10	12	July	No	Req	15	\$25
El Paso City-County Hospital	El Paso	CyCo	204	95	5		3,645	Rotating	5	12	July	No	Req	39	\$25(i)
Methodist Hospital	Fort Worth	Church	160				3,229	Rotating	5	12	July	No	Req	17	No
St. Joseph's Hospital	Fort Worth	Church	190	12	11	77	4,374	Rotating	6	12	July	No	None	15	\$30(i)
John Sealy Hospital	Galveston	City	446	50	25	25	5,855	Rotating	12	12	July	No	Req	52	No
St. Mary's Infirmary <sup>1</sup>	Galveston	Church	225	15	30	55	3,902	Mixed	3	12	June	No	None	15	\$20
Hermann Hospital	Houston	NPAasn	224	75	25		4,496	Rotating	8	12	July	No	Req	37	\$25
Jefferson Davis Hospital <sup>1</sup>	Houston	CyCo	432	100			8,336	Rotating	20	24	July	No	Req	20	\$25-50
Medial and Surgical Memorial Hosp.	San Antonio	NPAasn	115	2	5	93	3,324	Mixed	4	12	July	No	None	23	\$25
Nix Hospital <sup>1</sup>	San Antonio	Corp	169			100	5,315	Rotating	4	12	July	(105)	None	23	\$25
Robert B. Greco Memorial Hospital	San Antonio	County	195	100			4,942	Rotating	12	12	July	No	Req	32	\$10
Santa Rosa Hospital	San Antonio	Church	305	16	11	73	5,982	Rotating	6	12	July	No	Req	17	\$25
Gulf, Colorado and Santa Fe Hospital	Temple	NPAasn	150			100	1,260	Rotating	1	12	July	(106)	None	26	\$20
Kings Daughters Clinic and Hospital	Temple	NPAasn	118	20	25	55	2,811	Mixed	3	12	July	No	Req	19	\$20
Scott and White Hospital	Temple	Corp	175				3,595	Rotating	8	12	July	(106)	Req	19	\$20
Providence Hospital	Waco	Church	180	9	53	38	4,755	Mixed	4	12	June	No	None	21	\$25
UTAH															
Thomas D. Dee Memorial Hospital	Ogden	Church	240	7	10	83	6,055	Rotating	5	12	July	No	Op	26	\$25
Dr. W. H. Groves Latter-Day Saints Hospital	Salt Lake City	Church	436			100	8,001	Rotating	11	24	July	(107)	Req	22	\$15-20(z)
Holy Cross Hospital	Salt Lake City	Church	242	3	23	74	3,883	Mixed	3	12	Jan. & July	No	None	20	\$15(r)
St. Mark's Hospital <sup>1</sup>	Salt Lake City	Church	168	4	12	84	3,518	Rotating	3	12	July	No	None	16	\$25(h)
Salt Lake County General Hospital	Salt Lake City	County	232	94	6		3,245	Rotating	8	12	July	No	Req	18	\$15(i)
VERMONT															
Bishop DeGoesbriand Hospital	Burlington	Church	122	52	21	27	3,235	Rotating	3	12	July	No	None	23	\$25
Mary Fletcher Hospital	Burlington	NPAasn	150	24	39	37	7,308	Rotating	5	12	July & Sept.	No	None	26	\$25

Numerical and other references will be found on page 831.





NOTES

1. Women interns admitted.
2. Women interns only.
- \* Majority of patients available for teaching purposes.
- (a) In lieu of maintenance.
- (b) Salary established by government pay tables.
- (c) \$30 per month second year.
- (d) Bonus of \$110.
- (e) Bonus of \$50.
- (f) Bonus of \$250.
- (g) Bonus of \$180.
- (h) Bonus of \$160.
- (i) Bonus of \$120.
- (j) Bonus of \$20.
- (k) Bonus of \$300.
- (m) Bonus of \$25.
- (n) Bonus of \$150.
- (o) \$10 per month second year.
- (p) \$25 per month second year.
- (q) \$25 per month first year; \$50 per month second year; bonus of \$100.
- (r) Bonus of \$50.

- (s) Bonus of \$40.
- (t) \$15 per month second year.
- (u) \$25 per month for 4 months; \$50 per month for 8 months; bonus of \$100.
- (v) Bonus of \$125.
- (w) Bonus of \$30.
- (x) \$20 per month to seniors after completion of 12 months' service.
- (y) Bonus of \$50 first year; \$100 second year.
- (z) Bonus of \$75.
- (aa) Net salary \$75 per month. Appointments made by Chief of Office, The Panama Canal, Washington, D. C.
- (bb) Prefer aspirants going into foreign missions or boys born and raised in Hawaii.
- (cc) All internships reserved for the fifth year students of the College of Medicine, University of the Philippines.
- (dd) \$25 per month after first 6 months; \$50 per month second year.
- (1-a) January, July, October.

- (1-b) January, March, July, September, November.
- (1-c) Quarterly.
- (1-d) Every two months.
- (1-e) January, May, September.
- (1-f) January, April, July.
- (1-g) April, July, October.
- (1-h) Medicine: January, April, July, October; surgery: March, June, September, December.
- (1-i) January, April, May, July, September, October.
- (1-j) April, July, September.
- (1-k) Medicine: February, June, October; surgery: every other month; pathology and roentgenology, July.
- (1-m) Every six weeks.
- (1-n) January, April, July, September.
- (1-o) March, June, September, December.
- (1-p) March, July, November.
- (1-q) February, June, October.
- (1-r) July, September, November.
- (1-s) Monthly.

Affiliation as Referred to in Column Headed: "Affiliated Service"

3. Arkansas Children's Home and Hospital, Little Rock, pediatrics.
4. Patton State Hospital, Patton, psychiatry.
5. Children's Hospital, Los Angeles Maternity Service, pediatrics, obstetrics.
6. Fairmont Hospital, San Leandro, tuberculosis.
7. Woman's Hospital, Pasadena, obstetrics.
8. Mercy Hospital, San Diego, obstetrics, gynecology, pediatrics.
9. Laguna Honda Home Infirmary, San Francisco, chronic diseases: Hassler Health Home, Redwood City, tuberculosis.
10. St. Francis Hospital, San Francisco, obstetrics, pediatrics.
11. San Francisco Hospital, obstetrics, gynecology, pediatrics.
12. Delaware State Hospital, Farnhurst, psychiatry.
13. Santa Barbara General Hospital, communicable diseases, tuberculosis, psychiatry, outpatient service.
14. Porter Sanitarium and Hospital, Denver, general.
15. St. Elizabeths Hospital, Washington, obstetrics.
16. Gallinger Municipal Hospital, Washington, pediatrics, tuberculosis, communicable diseases, psychiatry.
17. Gallinger Municipal Hospital, Children's Hospital, Washington, obstetrics, pediatrics.
18. Grady Hospital, Atlanta, pediatrics.
19. Grady Hospital, Atlanta, obstetrics.
20. Home for Infants, Chicago, obstetrics.
21. Child, tuberculosis.
22. Child, obstetrics, gynecology.
23. Rotation service established between Broadlawn and approved private hospitals.
24. Watkins Memorial Hospital, Lawrence.
25. Sedgewick County Hospital, Wichita, surgery, outpatient service.
26. Salvation Army Home and Hospital, Sedgewick County Hospital, Wichita, obstetrics, general.
27. Louisville City Hospital, Children's Free Hospital, obstetrics, pediatrics.
28. Children's Free Hospital, Louisville, pediatrics; Waverly Hills Sanatorium, Waverly Hills, tuberculosis.
29. Charity Hospital, New Orleans, obstetrics, gynecology, pediatrics.
30. Johns Hopkins Hospital, Baltimore, pathology.
31. Johns Hopkins Hospital, Baltimore, urology.
32. Sydenham Hospital, University Hospital, Baltimore, communicable diseases, pediatrics, obstetrics.
33. Sydenham Hospital, Baltimore, communicable diseases.
34. Boston State Hospital, Worcester State Hospital, Children's Hospital, psychiatry, pediatrics.
35. Evangeline Booth Maternity Hospital and Home, Boston.
36. Norfolk County Hospital, South Braintree, tuberculosis.
37. Shriners Hospital for Crippled Children, Health Department Hospital, Wesson Maternity Hospital, Springfield, orthopedics, communicable diseases, obstetrics.
38. Mercywood Sanitarium, Ann Arbor, psychiatry.
39. Herman Klefer Hospital, Detroit.
40. Herman Klefer Hospital, Children's Hospital, Detroit.
41. Herman Klefer Hospital, communicable diseases, tuberculosis; St. Joseph's Retreat, Dearborn, neurology.
42. Christian Psychopathic Hospital, Sunshine Sanatorium, Grand Rapids, psychiatry, tuberculosis; Kalamazoo State Hospital, psychiatry.
43. Jackson County Tuberculosis Sanatorium, Jackson County Isolation Hospital, Michigan State Prison Hospital, Jackson.
44. Jackson County Tuberculosis Sanatorium, Jackson County Isolation Hospital, Jackson.
45. Ingham Sanatorium and Boys' Vocational School Hospital, Lansing, tuberculosis, otolaryngology.
46. Miller Memorial Hospital, Duluth, outpatient service.
47. Miller Memorial Hospital, Hearing Hospital, Duluth, outpatient service.
48. Gillette State Hospital for Crippled Children, St. Paul, pediatrics, orthopedics.
49. St. Peter State Hospital, St. Peter, psychiatry.
50. Shriners Hospital for Crippled Children, Minneapolis, orthopedics.
51. Children's Hospital, St. Paul, pediatrics.
52. St. Louis Children's Hospital, Shriners Hospital for Crippled Children, City Isolation Hospital, surgery, orthopedics, communicable diseases.
53. Jewish Hospital, tuberculosis; City Isolation Hospital, pediatrics.
54. Alexian Hospital, otolaryngology, outpatient service.
55. City Isolation Hospital, communicable diseases; Robert Koch Hospital, tuberculosis; City Sanitarium, psychiatry.
56. City Isolation Hospital, St. Louis.
57. Pine Breeze Sanatorium, Children's Hospital, Chittanooga, tuberculosis, pediatrics.
58. Newark City Hospital, obstetrics, gynecology, pediatrics.
59. County Hospital, Ridgewood, tuberculosis.
60. City Hospital, Jersey City; Hudson County and Sanatorium, Secaucus.
61. Margaret Hague Maternity Hospital, Jersey City.
62. New Jersey State Hospital, Marlboro, psychiatry; Allenwood Sanatorium, Allenwood, tuberculosis.
63. Fairview Sanatorium, New Lisbon, tuberculosis.
64. Anthony N. Brady Maternity Hospital, Albany.
65. Kingston Avenue Hospital, Brooklyn, communicable diseases.
66. Brooklyn Home for Consumptives.
67. Children's Hospital, Buffalo, pediatrics.
68. Emergency Hospital of the Sisters of Charity, St. Mary's Infant Asylum and Maternity Hospital, Providence Retreat.
69. Binghamton State Hospital, Binghamton, psychiatry.
70. Ulster County Tuberculosis Hospital, Kingston.
71. Jewish Maternity Hospital, New York City.
72. New York State Hospital, Ray Brook, tuberculosis.
73. Misericordia Hospital, New York City, obstetrics, pediatrics.
74. Rotation service established between Hospital of the Good Shepherd, Syracuse Memorial Hospital, City Hospital and Syracuse Psychopathic Hospital.
75. Cass County Hospital, Fargo, obstetrics.
76. Children's Hospital, Akron, pediatrics.
77. Molly St. .....
78. Children's .....
79. Hamilton .....
80. Longview .....
81. Cincinnati .....
82. St. Ann's .....
83. Children's .....
84. Starling .....
85. Stillwater Sanatorium, Dayton, tuberculosis.
86. Shriners Hospital for Crippled Children, Portland, orthopedics.
87. Alentown State Hospital, psychiatry.
88. Hospital of the University of Pennsylvania, Philadelphia, obstetrics.
89. Philadelphia Hospital for Contagious Diseases.
90. Children's Hospital of the Mary J. Drexel Home, Philadelphia, pediatrics.
91. Henry Phipps Institute of the University of Pennsylvania, Philadelphia, pediatrics.
92. Children's Hospital, Philadelphia Hospital for Contagious Diseases.
93. Misericordia Hospital, Philadelphia, obstetrics, gynecology.
94. Pennsylvania Hospital, Department for Mental and Nervous Diseases, Philadelphia.
95. .....
96. .....
97. .....
98. .....
99. .....
100. .....
101. .....
102. .....
103. .....
104. Bradford Memorial Hospital for Babies, Parkland Hospital, Baylor University Hospital, Dallas.
105. Mission Home, San Antonio, obstetrics.
106. Gulf, Colorado and Santa Fe Hospital and Scott and White Hospital, affiliated and furnish one internship.
107. Utah State Hospital, Provo, psychiatry.
108. Blue Ridge Sanatorium, Charlottesville, tuberculosis.
109. Norfolk Protestant Hospital, Florence Crittenton Home, Children's Clinic of the Kings Daughters, Norfolk, obstetrics, pediatrics.
110. Pine Camp Hospital, Brook Hill.
111. Children's Orthopedic Hospital.
112. Frilands Sanatorium and Isolation Hospital, tuberculosis, communicable diseases, pediatrics, orthopedics.
113. King County Hospital, Seattle, obstetrics, gynecology, pediatrics.
114. Edgecliff .....
115. Edgecliff .....
116. Milwaukee .....
117. Milwaukee .....
118. Milwaukee .....
119. Milwaukee .....
120. Milwaukee .....
121. Milwaukee .....
122. Milwaukee .....
123. Milwaukee .....
124. Milwaukee .....
125. Milwaukee .....
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# HOSPITALS APPROVED FOR RESIDENCIES IN SPECIALTIES

By the Council on Medical Education and Hospitals

HOSPITALS, 451; RESIDENCIES, 3,700

The following hospitals, conforming to the standards of the Council, furnish acceptable residencies in the several specialties designated. Applicants are required to present evidence of graduation from an approved medical school and completion of at least one year of approved internship. In a few cases, equivalent experience in practice is accepted in lieu of preliminary hospital experience.

**Regulations for Certification:** It is important to emphasize that residencies alone are not necessarily sufficient preparation for the practice of a specialty. Other types of training are also available and may be required. Candidates should acquaint themselves with the requirements by direct correspondence with the secretaries of the specialty boards.

**Statistical Data:** The statistical data have been obtained from annual reports covering the calendar year 1937. In a few instances earlier reports have been consulted. In most cases, this information is supplemented in the Council's files by inspection reports and by comments received from residents who have completed the listed service. The data should be examined with the following considerations in mind:

**Chief of Service:** It is required that there be an organized and qualified staff in the department offering residencies. The names listed are those most recently reported as departmental chairmen. In university hospitals, professors usually are given. Blank spaces indicate recent unconfirmed changes or supervision is supplied by chiefs on parallel or rotating assignments. For personal data see list of physicians in state sections.

**Inpatients:** The figures refer to total inpatients treated in the specialty. Exceptions are in anesthesia, radiology and pathology where total hospital admissions are used. In obstetrics, some hospitals include new-borns, others do not.

**Per Cent Free:** An index to charity work performed, although in every instance the majority of patients are available for instruction.

**Outpatients:** Where available, the service is nearly always required.

**Residencies, Assistant Residencies and Length of Appointment:** Information supplied indicates whether progressive services are available and over what period of time. The eldest in point of service is the resident and others assistant residents whether so designated by the hospital or not. Senior internships in specialties are classed as assistant residencies.

**Salary:** It is advisable to confirm the quoted figure when applying. Unless otherwise indicated, compensation includes room and board. In fellowships, the hospital usually supplies maintenance only; the stipend is provided from other sources.

**Deaths and Autopsies:** These are reported for the specialties. In anesthesia, pathology and radiology, figures are given for the entire hospital. Some obstetrical services include new-born deaths and autopsies.

**Important:** All hospitals approved for residencies submit names of residents to the office of the Council for permanent credit and registration. It is in the interest of every house officer to assure himself that his name is properly recorded and that the correct dates of all appointments are submitted.

## INDEX TO LIST

	Page		Page		Page		Page
1. Internal medicine		B. Psychiatry	837	6. Surgery		8. Urology	842
a. General medicine	832	c. Epilepsy	838	a. General surgery	840	9. Ophthalmology	844
b. Cardiology	834	d. Mental deficiencies	838	b. Neurosurgery	842	10. Otolaryngology	844
c. Communicable diseases	834	4. Dermatology and syphilology	838	c. Thoracic surgery	842	a. Ophthalmology-otolaryngology	845
d. Tuberculosis	834	5. Obstetrics and gynecology		d. Industrial surgery	842	11. Pathology	845
e. Malignant diseases	835	a. Gynecology	838	e. Fractures	842	12. Radiology	847
f. Mixed residency	835	b. Obstetrics	838	f. Plastic surgery	842	Physical therapy	847
2. Pediatrics	835	c. Obstetrics-gynecology	839	g. Anesthesia	842		
3. Psychiatry and neurology				7. Orthopedic surgery	842		
a. Neurology	837						

## 1. INTERNAL MEDICINE

a. GENERAL MEDICINE			Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Service	Beginning Salary	Residents	Assistant Residents	Service Begins	Available Training (Months)	Deaths	Autopsies
Hillman Hospital	Birmingham, Ala.	J. S. McLester and H. R. Carter	2,047	100	Yes	\$60	1	0	7/1	12	495	59	
Employees' Hospital of the Tennessee Coal, Iron and Fresno County	Fairfield, Ala. Fresno, Calif.	G. F. Walsh R. B. Tupper and W. E. Schottstaedt	1,783	..	Yes	\$100	1	0	7/1	12	147	35	
Cedars of Lebanon Hospital	Los Angeles	H. Wiggins	2,378	99	Yes	\$65	3	0	7/1	12	451	114	
Los Angeles County Hospital	Los Angeles	B. O. Raulston	1,380	18	Yes	\$75	1	0	7/1	12	140	742	
White Memorial Hospital	Los Angeles	D. D. Comstock	10,633	100	Yes	\$10	6	0	4/1	36	1,831	21	
Alameda County Hospital	Oakland, Calif.	R. T. Sutherland and H. G. MacLean	639	2	Yes	\$90	1	0	7/1	36	50	21	
Alameda County Charity Hosp.	San Bernardino, Calif.	H. Gentry	3,884	100	No	\$40	1	2	7/1	12	534	164	
Alameda County Hospital	San Diego, Calif.	E. M. Fetter	429	100	Yes	\$75	2	0	7/1	12	75	31	
Alameda County Hospital	San Francisco	D. Atkinson	3,797	100	Yes	\$75	2	0	7/1	12	23	6	
Alameda County Hospital	San Francisco	L. H. Briggs	464	4	Yes	\$25	1	0	7/1	12	116	12	
Alameda County Hospital	San Francisco	H. P. Hill	1,205	16	Yes	\$50	1	0	6/15	12	119	12	
Alameda County Hospital	San Francisco	L. H. Briggs and G. D. Barnett	1,215	8	Yes	\$75	1	0	7/1	12	119	12	
Stanford University Hospital	San Francisco	A. Bloomfield	2,895	100	No	\$4	3	3	7/1	12	105	43	
University of California Hospital	San Francisco	W. J. Kerr	1,888	3	Yes	\$25	1	5	7/1	12	93	63	
Santa Clara County Hospital	San Jose, Calif.	G. Grey	1,202	64	Yes	\$25	1	5	7/1	12	93	63	
Colorado General Hospital <sup>20</sup>	Denver	K. K. Waring	3,383	100	Yes	\$75	1	0	7/1	12	127	95	
Denver General Hospital	Denver		709	61	Yes	\$75	1	0	7/1	12	127	95	
Grace Hospital	New Haven, Conn.	S. J. Goldberg	1,418	100	No	\$50	1	0	7/1	12	169	42	
New Haven Hospital	New Haven, Conn.	F. G. Blake	986	10	Yes	\$90	2	0	7/1	12	207	119	
Central Disp. and Emergency Hosp.	Washington, D. C.	H. M. Kaufman	1,250	34	Yes	\$40	1	1	1/1&7/1	24	169	42	
Freedmen's Hospital (col.)	Washington, D. C.	R. L. Gregory	2,287	17	Yes	\$50	1	1	6/15	24	133	25	
			743	85	Yes	\$50	1	0	7/1	12	133	25	

Numerical and other references will be found on page 847.

## 1. INTERNAL MEDICINE—(Continued)

a. GENERAL MEDICINE (Continued)		Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Service	Beginning Salary	Residents	Assistant Residents	Service Begins	Available Training (Months)	Deaths	Autopsies
Gallinger Municipal Hospital.....	Washington, D. C.....	W. M. Yater.....	2,574	99	No	\$30	2	6	7/1	12	548	170
Garfield Memorial Hospital.....	Washington, D. C.....	B. F. Weems.....	4,592	..	Yes	\$50	1	0	7/1	12	147	37
Grady Hospital .....	Atlanta, Ga.....	C. W. Stricker and R. H. Oppenheimer	3,085	100	Yes	\$50	2	2	6/20	12	568	244
University Hospital.....	Augusta, Ga.....	V. P. Sydenstricker.....	1,932	44	Yes	\$45	1	3	7/1	12	281	77
Cook County Hospital.....	Chicago.....	C. C. Maher.....	18,290	100	No	\$25	5	0	1/1&7/1	12	3,903	623
Passavant Memorial Hospital.....	Chicago.....	C. A. Elliott.....	1,341	7	Yes	None	3	0	1/1	12	67	38
Presbyterian Hospital.....	Chicago.....	E. E. Irons.....	3,662	22	Yes	\$50	1	0	9/1	24	116	70
Provident Hospital (col.).....	Chicago.....	J. L. Hall.....	565	63	Yes	\$50	1	0	9/1	12	100	22
Research and Educational Hospital <sup>2</sup> .....	Chicago.....	R. W. Keeton.....	728	100	Yes	\$50	2	0	7/1	24	59	53
St. Luke's Hospital.....	Chicago.....	G. F. Dick.....	1,638	6	Yes	None	2	0	7/1	12	83	38
University of Chicago Clinics.....	Chicago.....	J. F. Dick.....	2,022	38	Yes	None	1	4	1/1&7/1	12	66	61
Wesley Memorial Hospital <sup>2</sup> .....	Chicago.....	W. H. Holmes.....	310	23	Yes	\$75	1	0	1/1	12	28	20
Evanston Hospital.....	Evanston, Ill.....	J. G. Carr.....	2,731	10	Yes	\$83	1	0	1/1	24	100	74
Indianapolis City Hospital.....	Indianapolis.....	R. M. Moore.....	1,660	88	Yes	\$42	2	0	7/1	12	419	171
Indiana University Hospitals.....	Indianapolis.....	J. O. Ritchey.....	1,040	82	Yes	\$33	1	1	7/1	12	88	53
University of Kansas Hospital.....	Iowa City, Kan.....	F. M. Smith.....	2,204	66	Yes	\$20	1	4	7/1	36	110	72
Louisville City Hospital.....	Kansas City, Kan.....	R. H. Maier.....	1,113	66	Yes	\$50	1	2	7/1	36	54	70
Charity Hospital.....	Louisville, Ky.....	J. W. Moore.....	1,157	90	Yes	\$14	1	7	7/1	36	454	98
Touro Infirmary.....	New Orleans.....	G. S. Bel and J. H. Musser	3,018	100	Yes	\$25	2	6	7/1	36	571	345
Baltimore City Hospitals.....	Baltimore.....	C. L. Eselman.....	1,256	35	Yes	\$25	2	0	7/1	12	..	..
Church Home and Infirmary.....	Baltimore.....	T. R. Boggs.....	2,407	99	Yes	\$17	1	5	7/1	24	481	214
Johns Hopkins Hospital.....	Baltimore.....	T. R. Boggs.....	395	25	Yes	\$25	1	0	7/1	12	49	20
Maryland General Hospital.....	Baltimore.....	W. T. Longcope.....	3,341	43	Yes	None	1	6	7/1&9/1	12-60	232	155
Merey Hospital.....	Baltimore.....	E. B. Freeman.....	575	35	Yes	\$35	1	0	7/1	12	104	18
Provident Hospital and Free Dispen- sary (col.).....	Baltimore.....	M. C. Pincoffs.....	836	60	Yes	\$25	1	1	7/1	24	110	25
St. Agnes' Hospital.....	Baltimore.....	T. Sprunt.....	287	73	Yes	\$25	1	1	10/15	12	84	14
St. Joseph's Hospital.....	Baltimore.....	J. T. O'Mara.....	951	32	Yes	None	1	0	7/1	12	126	25
Sinal Hospital.....	Baltimore.....	C. Smink and H. M. Stein	741	28	Yes	None	1	1	7/1	24	124	32
South Baltimore General Hospital.....	Baltimore.....	C. R. Austrian.....	1,189	37	Yes	\$30	1	2	7/1	12	157	42
Union Memorial Hospital.....	Baltimore.....	G. McLean.....	855	46	Yes	\$50	1	0	7/1	12	53	20
University Hospital.....	Baltimore.....	W. A. Baetjer.....	1,163	16	Yes	\$12	1	2	7/1	12	109	44
West Baltimore General Hospital.....	Baltimore.....	M. O. Pineoffs.....	1,378	47	Yes	None	1	2	7/1	24	164	86
Beth Israel Hospital.....	Boston.....	J. N. Zierler.....	434	36	No	\$20	1	0	7/1	12	59	9
Boston City Hospital <sup>7</sup> .....	Boston.....	H. Linenthal.....	1,669	39	Yes	\$79	1	0	7/1	12	155	80
Joseph H. Pratt Diagnostic Hospital.....	Boston.....	G. R. Minot.....	10,385	94	Yes	4	10	1	Varies	12	1,260	485
Massachusetts General Hospital.....	Boston.....	S. H. Proger.....	736	..	Yes	\$42	1	0	7/1	12	8	4
Massachusetts Memorial Hospitals, Robert Dawson Evans Department of Clinical Research and Preventive Medicine.....	Boston.....	J. H. Means.....	1,753	44	Yes	\$42	1	5	0/1	24	154	74
Peter Bent Brigham Hospital.....	Boston.....	R. Fltz.....	420	31	Yes	\$91	4	0	7/1	36	..	..
University Hospital.....	Boston.....	H. A. Christian.....	2,061	46	Yes	\$42	1	6	Varies	24	233	139
Alexander Blain Hospital.....	Ann Arbor, Mich.....	C. C. Sturges.....	3,911	81	Yes	\$25	7	8	7/1	36	204	120
City of Detroit Receiving Hospital.....	Detroit.....	R. L. Fisher.....	168	..	Yes	\$75	1	0	7/1	12	8	4
Grace Hospital.....	Detroit.....	G. B. Myers.....	4,238	100	Yes	\$50	1	5	7/15	24	916	373
Harper Hospital.....	Detroit.....	J. T. Watkins.....	2,478	27	Yes	\$50	1	1	0/1	12	302	89
Henry Ford Hospital.....	Detroit.....	H. A. Freund.....	2,618	12	Yes	\$25	1	6	7/1	36	..	..
Providence Hospital.....	Detroit.....	F. J. Sladen.....	..	..	Yes	\$180	1	4	9/1	12	78	33
Eloise Hospital (Dr. Wm. J. Seymour Hospital).....	Detroit.....	M. Auble.....	1,504	10	No	\$100	1	0	7/1	12	247	34
Hurley Hospital.....	Eloise, Mich.....	N. Sandler.....	2,270	98	Yes	\$100	1	1	7/1	12	597	155
Minneapolis General Hospital <sup>1</sup> .....	Flint, Mich.....	M. S. Chambers.....	1,851	60	No	\$100	1	0	7/1	12	263	72
University Hospitals <sup>1</sup> .....	Minneapolis.....	G. Fahr.....	2,061	85	Yes	\$25	6	0	1/1&7/1	36	387	187
Aneker Hospital.....	Minneapolis.....	J. C. McKinley.....	1,054	12	Yes	\$50	4	0	1/1&7/1	36	143	100
St. Louis County Hospital.....	St. Paul.....	A. R. Hall and A. Hoff	2,768	98	Yes	\$50	6	0	7/1	12	201	215
Barnes Hospital <sup>2</sup> .....	St. Louis.....	H. Liggett.....	923	98	Yes	\$50	1	1	7/1	12	197	88
De Paul Hospital.....	St. Louis.....	D. P. Barr.....	3,435	17	Yes	\$25	1	3	7/1	24	151	95
Homier G. Phillips Hospital for Colored Jewish Hospital.....	St. Louis.....	E. P. Buddy.....	1,121	22	..	\$35	1	1	7/1	24	185	31
St. Louis City Hospital.....	St. Louis.....	D. Sexton.....	998	100	Yes	\$75	1	1	7/1	36	250	66
St. Luke's Hospital.....	St. Louis.....	L. Sale.....	1,666	25	Yes	\$42	1	1	7/1	12	145	34
St. Mary's Group of Hospitals.....	St. Louis.....	E. N. Neber.....	4,699	100	Yes	\$75	3	6	7/1	36	929	419
Jersey City Hospital.....	St. Louis.....	R. A. Kinsella.....	1,259	16	Yes	\$75	1	0	7/1	12	89	47
Albany Hospital.....	Jersey City, N. J.....	T. White.....	2,789	42	Yes	\$25	7	0	7/1	34	167	85
Coney Island Hospital.....	Albany, N. Y.....	L. W. Gorham.....	4,172	90	Yes	\$100	2	1	1/1&7/1	12	746	104
Cumberland Hospital.....	Brooklyn.....	P. I. Nash.....	1,479	2	Yes	\$25	1	1	7/1	36	139	106
Kings County Hospital.....	Brooklyn.....	H. Joachim.....	1,763	100	Yes	\$100	1	0	7/1	12	318	108
Long Island College Hospital.....	Brooklyn.....	J. Crawford and H. Moses	831	100	Yes	\$100	1	0	7/1	12	170	64
Norwegian Lutheran Deaconesses' Home and Hospital.....	Brooklyn.....	T. Howard.....	14,534	100	Yes	\$25	4	4	1/1&7/1	12	2,912	470
Buffalo City Hospital.....	Brooklyn.....	T. Howard.....	1,447	7	Yes	\$12	1	1	7/1	12	136	35
Buffalo General Hospital.....	Buffalo.....	C. Roberts.....	635	17	Yes	None	1	0	7/1	12	119	41
Millard Fillmore Hospital.....	Buffalo.....	A. H. Aaron.....	2,319	65	Yes	\$68	1	2	7/1	48	390	196
Queens General Hospital.....	Buffalo.....	J. Mesmer.....	2,576	3	Yes	\$25	1	6	7/1	12	340	128
Charles S. Wilson Memorial Hospital <sup>2</sup>	Buffalo.....	C. Boettiger.....	1,085	17	Yes	\$25	1	0	7/1	12	131	38
Metropolitan Life Insurance Co. Sanit.	Jamaica, N. Y.....	R. J. McMahon.....	2,380	100	Yes	\$15	1	1	7/1	12	408	218
Bellevue Hospital <sup>2</sup> .....	Johnson City, N. Y.....	W. H. Ordway.....	949	1	Yes	\$75	1	0	7/1	12	71	37
Flower-Platt Avenue Hospital.....	Mt. McGregor, N. Y.....	L. J. Boyd.....	311	100	No	\$150	2	0	Varies	12	3	0
Metropolitan Hospital.....	New York City.....	L. J. Boyd.....	11,453	100	Yes	..	3	8	1/1&7/1	12	..	..
Montefiore Hosp. for Chronic Diseases	New York City.....	L. J. Boyd.....	1,440	5	Yes	\$50	1	0	7/1	12	94	23
Mount Sinal Hospital <sup>18</sup> .....	New York City.....	L. Liehtwitz.....	2,242	100	Yes	\$100	2	0	7/1	12	429	69
New York Hospital.....	New York City.....	G. Baehr and B. S. Oppenheimer	546	88	Yes	\$50	1	3	1/1&7/1	12	103	80
N. Y. Post-Graduate Medical School and Hospital.....	New York City.....	E. F. DuBois.....	..	55	Yes	\$125	1	1	1/1&7/1	12	268	199
Presbyterian Hospital.....	New York City.....	W. G. Lough.....	1,697	23	Yes	None	1	7	7/1	60	147	101
Genesee Hospital.....	New York City.....	W. W. Palmer.....	1,521	13	Yes	\$90	1	0	7/1	12	99	30
Rochester.....	Rochester, N. Y.....	D. B. Jewett.....	3,561	20	Yes	\$42	1	3	7/1	12	..	..
Strong M nicipal Hospitals.....	Rochester, N. Y.....	D. A. Haller.....	1,185	14	Yes	\$75	1	0	7/1	12	121	23
Hospital of the Good Shepherd.....	Rochester, N. Y.....	W. S. McCann.....	1,583	21	Yes	\$50	1	1	7/1	12	148	77
Grasslands Hospital.....	Syracuse, N. Y.....	E. C. Reifstein.....	3,623	63	Yes	\$42	1	5	7/1	12	359	217
Duke Hospital.....	Valhalla, N. Y.....	M. Touart.....	1,564	2	No	\$33	1	1	7/1	12	150	50
	Durham, N. C.....	F. M. Hanes.....	897	86	Yes	\$75	1	1	1/1&7/1	24	162	124
			4,237	56	Yes	\$42	1	0	7/1	45	125	89

## 1. INTERNAL MEDICINE—(Continued)

a. GENERAL MEDICINE (Continued)													
			Chief of Service		Inpatients Treated	Per Cent Free	Outpatient Service	Beginning Salary	Residents	Assistant Residents	Service Begins	Available Training (Months)	Deaths
Watts Hospital	Durham, N. C.	W. R. Stanford	1,610	23	Yes	\$50	1	0	7/1	12	90	5	
City Memorial Hospital	Winston-Salem, N. C.	S. F. Pfohl	699	39	Yes	\$50	1	1	7/1	12	116	2	
City Hospital	Akron, O.	B. B. Grossman	1,503	30	Yes	\$55	1	0	7/1	12	211	2	
Cincinnati General Hospital	Cincinnati	M. D. Blankenhorn	2,440	87	Yes	*	1	13	7/1	60	707	43	
Deaconess Hospital	Cincinnati	F. C. Thless	770	5	No	\$75	1	0	7/1	12	105	2	
Good Samaritan Hospital	Cincinnati	G. Topmoeller	6,562	5	Yes	\$35	2	0	7/1	12	315	7	
Jewish Hospital	Cincinnati	W. Stix	1,577	20	Yes	\$45	2	0	7/1	12	131	2	
City Hospital	Cleveland	R. W. Scott	2,310	97	Yes	\$42	1	4	7/1	12	619	39	
Mount Sinai Hospital	Cleveland	S. S. Berger	1,460	20	Yes	\$60	1	0	7/1	12	145	5	
St. Alexis Hospital	Cleveland	H. B. Parryck	1,216	23	Yes	\$60	1	0	7/1	12	137	5	
St. John's Hospital	Cleveland	R. K. Updegraff, Sr.	1,289	18	No	\$25	1	0	7/1	12	117	2	
St. Luke's Hospital	Cleveland	W. C. Stoner	2,468	15	Yes	\$25	1	2	7/1	21	217	6	
University Hospitals	Cleveland	J. T. Wearn	5,538	35	Yes	\$25	1	10	7/1	36	316	24	
	Columbus, O.	C. A. Doan	933	33	Yes	\$25	2	2	7/1	26	104	30	
	Dayton, O.	B. Oleh	2,850	23	No	\$75	1	0	7/1	12	280	15	
	East Cleveland, O.	A. B. Schneider	960	2	Yes	\$50	1	0	7/1	12	104	34	
	Youngstown, O.	A. M. Rosenblum	1,504	3	No	\$50	1	0	7/1	12	529	14	
St. Elizabeth's Hospital	Oklahoma City	G. LaMotte	990	71	Yes	\$50	2	0	7/1	12	125	66	
State University and Crippled Children's Hospitals	Portland	L. Selling	1,692	100	Yes	\$30	1	2	7/1	36	411	200	
University of Oregon Medical School Hospitals	Ablington, Pa.	G. M. Piersol and G. H. Wells	1,312	25	Yes	None	1	0	7/1	12	117	36	
Abington Memorial Hospital	Danville, Pa.	W. J. Stainsby	1,400	27	Yes	\$50	1	0	9/1	12	95	27	
George F. Geisler Memorial Hospital	Philadelphia		822	20	Yes	\$110	1	0	7/1	12	155	57	
Germantown Dispensary and Hospital	Philadelphia	G. M. Piersol	1,165	33	Yes	None	1	0	7/1	12	90	45	
Graduate Hospital of the University of Pennsylvania	Philadelphia	O. H. Pepper	3,565	28	Yes	None	1	0	7/1	12	145	65	
Hosp. of the University of Pennsylvania	Philadelphia		1,297	31	No	None	1	0	6/15	12	194	61	
Jewish Hospital	Philadelphia	D. L. Farley and G. G. Duncan	1,439	28	Yes	\$20	2	0	7/1	12	235	116	
Pennsylvania Hospital	Philadelphia	C. L. Brown	1,036	58	Yes	\$40	2	0	7/1	36	122	55	
Temple University Hospital	Pittsburgh	F. W. Willets	1,355	54	Yes	\$85	1	0	9/1	12	240	57	
Allegheny General Hospital	Pittsburgh	J. D. Heard	923	39	Yes	\$83	1	0	9/1	12	67	22	
Elizabeth Steel Magee Hospital	Pittsburgh	W. W. G. MacLachlan	2,343	35	Yes	\$112	1	0	7/1	12	106	59	
Mercy Hospital	Pittsburgh		1,263	14	Yes	\$75	1	0	9/1	12	215	12	
St. Francis Hospital	Reading, Pa.	W. S. Bertolet	990	42	Yes	\$83	1	0	7/1	12	163	74	
Reading Hospital	Snyre, Pa.	S. D. Canklin	2,838	50	No	\$75	1	0	9/1	12	161	71	
Robert Packer Hospital	Charleston, S. C.	R. Wilson	1,633	71	Yes	\$40	1	0	7/1	12	315	117	
Roper Hospital	Memphis, Tenn.	J. B. McElroy	2,309	97	Yes	\$32	1	1	7/1	24	156	72	
John Gaston Hospital	Nashville, Tenn.	J. O. Manier	1,042	90	Yes	\$35	1	1	7/1	12	97	61	
Nashville General Hospital	Nashville, Tenn.	H. J. Morgan	1,305	29	Yes	\$35	1	2	7/1	12	163	55	
Vanderbilt University Hospital	Dallas, Tex.	H. M. Williams	2,762	20	Yes	\$50	1	2	1/1 & 7/1	12	169	82	
Baylor University Hospital	Dallas, Tex.	W. G. Reddick	1,625	91	Yes	\$10	2	0	7/1	12	143	57	
Parkland Hospital	Galveston, Tex.	C. T. Stone	1,228	50	Yes	\$50	1	0	7/1	12	143	57	
John Se	Norfolk, Va.		3,556	26	Yes	\$50	1	0	7/1	12	315	133	
Norfolk	Richmond	W. B. Parter	1,655	5	Yes	\$50	2	3	7/1	12	143	70	
Division	University	J. C. Filppin	1,761	30	Yes	*	1	1	7/1	36	199	43	
University	Madison	W. S. Middleton	1,753	13	Yes	\$25	3	0	7/1	12	643	223	
State of W.	Milwaukee	F. D. Murphy	5,038	97	Yes	\$40	1	0	7/1	12	143	57	
St. Joseph's Hospital	Wauwatosa, Wis.	T. J. Howard											
Milwaukee County Hospital													
b. CARDIOLOGY													
Indiana University Hospitals	Indianapolis	G. S. Bond	.....	82	Yes	\$23	1	0	7/1	12	...	...	
Pennsylvania Hospital	Philadelphia	W. D. Stroud	.....	25	Yes	\$23	1	0	7/1	12	...	...	
St. Francis Hospital	Pittsburgh	A. P. D'Zmura	202	14	Yes	\$50	1	0	7/1	12	...	...	
Rhode Island Hospital	Providence	F. T. Fulton	.....	39	Yes	\$50	1	0	7/1	12	...	...	
c. COMMUNICABLE DISEASES													
Los Angeles County Hospital	Los Angeles	P. Hamilton	3,204	100	.....	\$175	3	0	Varies	12	209	126	
Hospital for Children	San Francisco	E. B. Shaw	221	4	.....	\$70	1	0	7/1	12	46	5	
Municipal Hospitals	Hartford, Conn.	C. L. Thenebe	601	100	.....	\$125	1	0	7/1	24	...	112	
Municipal	Chicago	A. L. Hoynes	3,698	100	.....	\$100	8	0	Varies	12	189	10	
Boston	Boston	E. H. Place	1,427	94	.....	\$125	2	0	Varies	12	35	3	
Belmont	Worcester, Mass.	F. H. Nolton	532	100	.....	\$183	1	0	Varies	12	13	9	
Herman	Detroit	D. C. Young	5,021	97	.....	\$125	7	0	7/1	12	185	97	
Kansas City General Hospital	Kansas City, Mo.	G. Ferris and W. L. McBride	634	100	.....	\$40	1	0	7/1	12	60	53	
City Isolation Hospital	St. Louis	H. J. Uirleh	1,678	93	.....	\$75	1	0	7/1	12	105	2	
Essex County Hospital for Contagious Diseases	Bellerlie, N. J.	E. L. Smith	3,475	95	.....	\$50	2	0	1/1 & 7/1	13	105	55	
Kingsdon Avenue Hospital	Brooklyn	M. B. Gordon	2,807	100	.....	\$100	7	0	1/1 & 7/1	12	92	25	
Queens General Hospital	Jamaica, N. Y.	W. C. A. Steffen	654	100	.....	\$100	2	0	7/1	12	20	42	
Willard Parker Hospital	New York City	B. W. Hamilton	5,453	100	.....	\$100	7	0	1/1 & 7/1	12	81	67	
City Hospital	Cleveland	H. J. Gerstenberger	2,194	97	.....	\$42	1	1	7/1	12	134	67	
d. TUBERCULOSIS													
Arroyo Sanatorium	Livermore, Calif.	C. Bush	395	100	Yes	\$85	1	0	7/1	12	12	4	
Barlow Sanatorium	Los Angeles	H. W. Bosworth	158	6	Yes	\$100	1	0	Varies	12	2	97	
Los Angeles County Hospital	Los Angeles	C. Howson	1,223	100	Yes	\$175	2	0	Varies	36	322	1	
Pottenger Sanatorium and Clinic	Monrovia, Calif.	F. M. Potteger	110	...	Yes	\$50	1	0	7/1	12	22	40	
Olive View	Olive View, Calif.	E. S. Bennett	1,710	82	No	\$75	2	0	Varies	12	85	...	
San Francis	San Francisco	E. Rosencrantz	715	100	Yes	*	2	2	7/1	12	...	...	
Santa Clara County	San Jose, Calif.	C. Inane	216	100	Yes	\$150	1	1	7/1	12	100	54	
Fairmont Hospital of Alameda County	San Leandro, Calif.	H. G. Trimble	196	100	No	\$75	1	0	7/1	12	...	...	
Union Printers' Home and Tuberculosis Sanatorium	Colorado Springs	G. B. Webb	138	100	No	.....	2	1	Varies	24	16	2	
Denver General	Denver	G. L. Lincoln	170	100	Yes	\$50	1	0	7/1	12	32	15	
National Jewish Sanatorium of	Denver	G. J. Kaufman	445	100	Yes	\$100	5	1	Varies	12	20	8	
lives' Relief Society	Spivak, Colo.	A. Rest	366	100	Yes	\$100	5	0	Varies	36	20	8	
Norwich State Tuberculosis Sanat.	Norwich, Conn.	H. B. Campbell	600	...	Yes	\$175	3	0	Varies	24	74	25	
(Unens-on-Thames)	Wallingford, Conn.	D. R. Lyman	353	6	Yes	\$100	1	0	7/1	12	26	3	
Gaylord Farm Sanatorium	Deerart, Ill.	D. O. N. Lindberg	68	77	Yes	\$100	1	0	1/1	12	16	10	
Macon County Tuberculosis Sanatorium	Peoria, Ill.	M. Polink	265	99	Yes	\$100	2	0	Varies	12	16	4	
Peoria Municipal Tuberculosis Sanat.	Rockford, Ill.	W. J. Bryan	114	100	Yes	\$100	1	0	7/1	24	57	57	
Rockford Municipal Tuberculosis Sanat.	Rockford, Ill.		621	38	Yes	\$50	1	1	Varies	36	57	57	
Boehne Tuberculosis Hospital	Evansville, Ind.	P. D. Crimm											

## 1. INTERNAL MEDICINE—(Continued)

## d. TUBERCULOSIS (Continued)

		Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Service	Beginning Salary	Residents	Assistant Residents	Service Begins	Available Training (Months)	Deaths	Autopsies
Western Maine Sanatorium.....	Greenwood Mountain.....	L. Adams.....	161	..	Yes	\$35	1	0	Varies	24	15	5
Baltimore City Hospitals.....	Baltimore.....	H. M. Stein.....	491	99	No	\$17	1	1	7/1	24	152	82
Sanatorium Division of Boston City Hospital.....	Boston.....	J. A. Foley.....	1,088	100	No	\$100	4	4	Varies	12	196	49
North Reading State Sanatorium <sup>10</sup> ....	North Wilmington, Mass.....	C. B. McCorison....	460	..	Yes	\$150	1	0	Varies	12	10	0
Rutland State Sanatorium.....	Rutland, Mass.....	E. B. Emerson.....	367	..	Yes	\$75	1	0	Varies	12	43	11
Plymouth County Hospital.....	South Hanson, Mass.....	B. H. Peirce.....	199	..	Yes	\$100	1	0	Varies	12	32	17
Middlesex County Sanatorium.....	Waltham, Mass.....	S. H. Remick.....	639	..	Yes	\$150	2	0	Varies	12	74	33
Belmont Hospital.....	Worcester, Mass.....	R. H. Baker.....	290	100	Yes	\$133	4	0	Varies	24	53	28
University Hospital.....	Ann Arbor, Mich.....	J. Bornwell.....	.....	81	Yes	\$25	1	0	7/1	36	14	4
American Legion Hospital.....	Battle Creek, Mich.....	E. J. O'Brien and W. L. Howard.....	398	100	No	\$125	3	0	Varies	12	54	7
Herman Kiefer Hospital.....	Detroit.....	B. H. Douglas.....	1,321	97	Yes	\$130	11	0	Varies	12	339	39
Michigan State Sanatorium.....	Howell, Mich.....	G. L. Leslie.....	704	100	Yes	\$125	2	0	7/1	12	39	13
Morgau Heights Sanatorium.....	Marquette, Mich.....	R. F. Berry.....	173	94	Yes	\$150	1	0	1/1	12	26	7
William H. Maybury Sanatorium.....	Northville, Mich.....	H. S. Willis.....	1,481	100	No	\$150	6	0	Varies	36	100	51
Oakland County Tuberculosis Socat.....	Pontiac, Mich.....	G. A. Sherman.....	240	61	Yes	\$150	3	0	7/1	36	54	23
Nopemiog Sanatorium.....	Nopemiog, Mon.....	A. T. Laird.....	433	89	Yes	\$150	2	0	1/1&7/1	12	25	16
Glen Lake Sanatorium.....	Oak Terrace, Minn.....	E. S. Marlette.....	1,218	93	No	\$10	1	0	7/1	12	118	78
City Isolatioo Hospital.....	St. Louis.....	H. J. Ulrich.....	187	93	No	\$150	1	0	7/1	12	25	8
Mount St. Rose Sanatorium.....	St. Louis.....	L. C. Boistiere.....	345	52	No	\$123	1	0	7/1	12	51	30
Robert Koch Hospital.....	St. Louis.....	G. D. Kettelkamp.....	738	100	No	\$150	6	0	7/1	12	73	45
New Jersey State Sanatorium.....	Glen Gardner.....	S. B. English.....	891	100	Yes	\$166	4	0	Varies	36	11	4
Jersey City Hospital.....	Jersey City, N. J.....	B. S. Pollok.....	377	90	Yes	\$100	3	1	1/1&7/1	12	63	18
Hudson County Tuberculosis Hospital and Sanatorium.....	Secaucus, N. J.....	B. P. Potter.....	210	100	Yes	\$100	2	2	Varies	36	68	21
United States Marine Hospital.....	Fort Stanton, N. M.....	R. E. Porter.....	186	100	Yes	\$167	2	0	Varies	12	23	16
Albany Hospital.....	Albany, N. Y.....	R. J. Erickson.....	204	2	Yes	\$50	2	0	7/1	12	44	36
Montefiore Hospital Country Saant.....	Bedford Hills, N. Y.....	A. Shamaskin.....	509	97	No	\$100	3	0	1/1&7/1	12	0	0
Kings County Hospital.....	Brooklyn.....	C. Hamilton.....	1,019	100	Yes	\$100	1	2	1/1&7/1	12	...	...
Kingsda Avenue Hospital.....	Brooklyn.....	F. Murray.....	224	100	No	\$100	1	0	1/1&7/1	12	11	7
Buffalo City Hospital.....	Buffalo.....	.....	320	65	Yes	...	1	1	7/1	...	183	56
Loomis Sanatorium.....	Loomis, N. Y.....	C. D. Porfitt.....	313	3	No	\$123	3	0	Varies	12	24	1
Metropolitan Life Insurance Company Sanatorium.....	McGregor, N. Y.....	W. H. Ordway.....	174	100	No	\$150	2	0	Varies	12	2	1
Bellevue Hospital <sup>2</sup> .....	New York City.....	J. A. Miller.....	2,339	100	Yes	\$70	1	6	1/1&7/1	24	...	...
Lenox Hill Hospital.....	New York City.....	G. Thorburn.....	237	24	Yes	\$50	1	0	7/1	12	11	6
Metropolitan Hospital.....	New York City.....	G. G. Ornstein.....	668	100	Yes	\$100	1	6	7/1	12	241	23
Montefiore Hosp. for Chronic Diseases	New York City.....	H. Wessler.....	439	88	Yes	\$100	1	2	1/1&7/1	12	80	67
Homer Folis Tuberculosis Hospital.....	Oneonta, N. Y.....	R. Horton.....	461	90	Yes	\$100	2	2	7/1&10/1	36	32	8
Mualdelph Sanatorium.....	Ottsville, N. Y.....	A. Kane.....	978	97	...	\$120	7	0	1/1&7/1	12	4	0
Ioia-Monroe County Tuberculosis Sanat.	Rochester, N. Y.....	E. Bridge.....	947	92	Yes	\$100	4	0	7/1	48	89	46
Sea View Hospital.....	Staten Island, N. Y.....	G. G. Ornstein.....	2,784	100	Yes	\$100	16	0	1/1&7/1	12	321	130
Trudeau Sanatorium.....	Trudeau, N. Y.....	F. H. Helse.....	440	3	No	Noae	2	0	Varies	12	3	0
Grasslands Hospital.....	Volhalla, N. Y.....	J. M. Nicklas.....	698	86	Yes	\$117	3	2	1/1&7/1	36	64	41
Jefferson County Sanatorium.....	Watertown, N. Y.....	S. E. Simpson.....	171	80	Yes	\$100	1	0	7/1	36	16	8
State Tuberculosis Sanatorium.....	Saa Havea, N. D.....	G. A. Dods.....	471	90	Yes	\$75	1	0	7/1	12	42	12
Hamilton County Tuberculosis Sanat.	Cincinnati.....	H. K. Plueham.....	1,271	95	Yes	...	3	0	7/1	12	188	100
City Hospital.....	Cleveland.....	J. C. Plueham.....	969	97	Yes	\$42	2	0	7/1	12	201	66
Sunny Acres, Cleveland Tuberculosis Sanatorium.....	Warrens, O.....	R. H. Browning.....	909	100	Yes	\$167	3	3	7/1	12	15	8
Eagleville Sanatorium for Consumptives	Eagleville, Pa.....	A. J. Cohen.....	370	44	Yes	\$123	2	0	Varies	36	...	...
Germantown Dispensary and Hospital..	Philadelphia.....	F. M. McPhedran.....	62	20	Yes	\$180	1	0	7/1	12	8	5
White Haven Sanatorium.....	White Haven, Pa.....	F. A. Craig.....	321	7	No	\$50	5	0	Varies	36	85	60
State Sanatorium.....	Whitum Lake, R. I.....	.....	716	87	Yes	\$150	7	0	Varies	12	69	33
Plae Breeze Sanatorium.....	Chattanooga, Tenn.....	J. L. Hamilton.....	478	87	Yes	\$125	1	0	12/1	12	56	9
Davidson County Tuberculosis Hospital	Nashville, Tenn.....	R. R. Crowe.....	571	85	Yes	\$150	1	0	7/1	12	66	15
Hopemont Sanitarium.....	Hopemont, W. Va.....	A. V. Cadden.....	673	..	Yes	\$165	5	0	7/1	12	39	20
Wisconsin State Sanatorium.....	Statesan.....	H. M. Coon.....	110	92	No	\$200	2	0	Varies	36	15	10

## e. MALIGNANT DISEASES

Los Angeles County Hospital.....	Los Angeles.....	H. P. Jacobson.....	914	100	Yes	\$10	2	0	10/1	12	171	82
Albert Stealer Clinic for Cancer and Allied Diseases.....	Atlanta, Ga.....	R. H. Fike.....	468	100	Yes	\$75	1	1	7/1	24	37	21
Michael Reese Hospital <sup>2</sup> .....	Chicago.....	M. Cutler.....	270	41	Yes	Nooe	2	0	1/1&7/1	12	...	...
Collis P. Huntington Memorial Hosp. <sup>1</sup>	Boston.....	C. C. Simmons.....	1,411	20	Yes	a	1	1	Varies	...	14	8
Pondville Hospital at Norfolk.....	Wrentham, Mass.....	E. M. Daland.....	1,430	45	Yes	\$150	7	0	Varies	12	264	213
Eloisa Hospital (Dr. Wm. J. Seymour Hospital).....	Eloisa, Mich.....	R. Katsuki.....	456	98	Yes	\$110	1	0	9/1	12	179	79
Barnard Free Skin and Cancer Hosp. <sup>3</sup>	St. Louis.....	F. J. Tausig.....	887	100	Yes	\$25	3	0	7/1	12	38	12
Jersey City Hospital.....	Jersey City, N. J.....	H. Martin and J. Faison.....	326	90	Yes	\$100	1	0	1/1	12	31	4
Brooklyn Cancer Institute of Kings County Hospital.....	Brooklyn.....	W. E. Howes.....	781	100	Yes	\$50	2	2	1/1&7/1	24	160	41
Memorial Hospital for the Treatment of Cancer and Allied Diseases.....	New York City.....	J. Ewing.....	2,702	3	Yes	\$125	10	0	1/1&7/1	36	116	51
New York City Cancer Institute Hosp.	New York City.....	L. I. Kaplan.....	1,038	...	Yes	\$70	4	4	1/1&7/1	16	520	116
Jenness Hospital.....	Philadelphia.....	R. W. Teahan.....	589	40	Yes	\$30	2	0	7/1	12	90	55

f. MIXED<sup>3</sup>

St. Vincent's Hospital.....	Birmingham, Ala.....	S. L. Ledbetter.....	3,444	3	No	\$75	3	0	7/1	12	126	22
Fairmont Hospital of Alameda County	Sao Leandro, Calif.....	.....	1,789	100	No	\$155	1	0	7/1	12	331	147
Riverside Hospital.....	San Jose, Calif.....	.....	1,190	10	Yes	\$50	1	0	7/1	12	31	10
Ellet Hospital.....	Minneapolis.....	.....	5,648	3	Yes	\$100	2	0	7/1	12	104	39
Chesapeake and Ohio Railway Hospital	Clifton Forge, Va.....	J. M. Emmett.....	5,113	55	Yes	\$50	2	0	7/1	12	92	20
McMillan Hospital.....	Charleston, W. Va.....	.....	2,313	10	...	\$50	2	0	7/1	12	84	12

## 2. PEDIATRICS

Children's Hospital.....	Birmingham, Ala.....	A. A. Walker.....	977	86	Yes	\$90	1	0	7/1	12	56	13
Hillman Hospital.....	Birmingham, Ala.....	A. A. Walker.....	1,237	100	Yes	\$10	1	0	7/1	12	98	41
California Babies Hospital.....	Los Angeles.....	R. P. Deakers.....	544	40	Yes	\$100	1	0	7/1	12	6	3
Children's Hospital.....	Los Angeles.....	H. Dietrich.....	2,650	45	Yes	\$10	1	8	7/1	12	168	158
Los Angeles County Hospital.....	Los Angeles.....	O. Reiss.....	2,744	100	Yes	\$19	2	0	4/1	24	156	99
White Memorial Hospital.....	Los Angeles.....	A. L. Hill.....	2,29	2	Yes	\$90	1	0	7/1	26	14	10
Children's Hospital of the East Bay...	Oakland, Calif.....	C. D. Sweet.....	1,187	2	Yes	\$27	1	1	7/1	12	21	12
Hospital for Children.....	San Francisco.....	C. F. Sweet.....	446	4	Yes	\$25	1	0	7/1	12	29	9



## 2. PEDIATRICS—(Continued)

			Inpatients Treated	Per Cent Free	Outpatient Service	Beginning Salary	Residents	Assistant Residents	Service Begins	Available Training (Months)	Deaths	Autopsies
San Francisco Hospital.....	San Francisco.....	Chief of Service W. A. Riley and R. P. Seltz										
Stanford University Hospitals.....	San Francisco.....	H. K. Faber	2,577	100	No	*	1	1	7/1	12	...	...
University of California Children's Hospital.....	San Francisco.....	F. S. Smyth	1,243	3	Yes	\$25	1	1	7/1	12	...	...
New Haven Children's Hospital.....	Denver.....	G. F. Powers	432	64	Yes	\$25	1	2	7/1	12	29	29
Frederick's Hospital (col.).....	New Haven, Conn.....	J. S. Wall	3,068	7	No	\$50	1	4	7/1	12	43	39
Gallinger Municipal Hospital.....	Washington, D. C.....	A. D. Smith	1,087	24	Yes	\$40	1	3	7/1	12	117	73
Grady Hospital.....	Washington, D. C.....	M. Nichols	6,023	...	Yes	\$40	1	10	7/1	12	47	27
Henrietta Eggleston Hosp. for Children	Atlanta, Ga.....	M. H. Roberts	594	85	Yes	*	1	0	10/1	36	275	121
University of Georgia Children's Hospital.....	Atlanta, Ga.....	M. H. Roberts	1,916	99	No	\$30	2	0	7/1	12	84	55
Cook County Children's Hospital.....	Augusta, Ga.....	C. M. Burpee	1,238	100	Yes	\$50	1	0	6/20	12	136	39
Michael Reese Children's Hospital.....	Chicago.....	J. Brennemann	903	78	No	\$40	2	0	1/1&7/1	12	75	33
Presbyterian Hospital.....	Chicago.....	M. Blatt	855	44	Yes	\$45	1	1	7/1	12	60	49
Provident Hospital.....	Chicago.....	C. Gruke	4,227	50	Yes	\$50	1	17	1/1&7/1	12	123	85
Research and Educational Hospital.....	Chicago.....	E. W. Bensley	8,334	100	Yes	\$25	5	0	1/1&7/1	12	454	333
University of Chicago Clinics.....	Chicago.....	F. W. Schlutz	3,500	41	Yes	\$100	1	0	7/1	12	...	...
Indianapolis City Hospital.....	Indianapolis.....	J. C. Carter	476	22	Yes	\$50	1	0	7/1	12	...	...
Indiana University Hospitals.....	Indianapolis.....	L. T. Meeks and M. Winters	221	63	Yes	\$50	1	0	7/1	12	27	15
University Hospitals.....	Iowa City.....	P. C. Jeans	153	100	Yes	\$50	1	0	7/1	12	22	16
University of Kansas.....	Kansas City.....	P. C. Neff	874	38	Yes	None	1	8	1/1&7/1	24	65	19
Louisville City Hospital.....	Louisville, Ky.....	P. F. Barbour	578	68	Yes	\$42	1	0	7/1	12	124	44
Charity Hospital.....	New Orleans.....	R. A. Strong and J. Sigmund	1,558	82	Yes	\$33	2	0	7/1	13	154	92
Touro Infirmary.....	New Orleans.....	L. R. DeBuls	904	86	Yes	\$20	1	2	7/1	24	74	40
Baltimore City Children's Hospital.....	Baltimore.....	E. A. Park	288	66	Yes	\$50	1	0	7/1	12	37	31
Johns Hopkins Children's Hospital.....	Baltimore.....	D. C. W. Smith	2,103	00	Yes	\$14	1	3	7/1	36	166	49
Union Memorial Children's Hospital.....	Boston.....	M. J. English	634	100	Yes	\$25	2	0	7/1	24	83	87
Boston City Children's Hospital.....	Boston.....	F. W. Barron	413	35	Yes	\$25	1	0	7/1	12	...	...
Boston Floating Hospital.....	Boston.....	K. D. Blackman	372	99	Yes	\$17	1	1	7/1	12	61	23
Massachusetts General Hospital.....	Boston.....	H. L. Higgins	1,033	45	Yes	None	1	2	7/1&9/1	12-48	141	106
University Hospital.....	Boston.....	T. B. Cooley	1,694	16	Yes	\$12	1	1	7/1	12	21	14
Children's Hospital.....	Boston.....	A. B. Johnston	4,920	04	Yes	\$53	1	0	Varies	26	207	85
Massachusetts General Hospital.....	Boston.....	I. McQuarrie	1,223	100	Yes	*	1	3	7/1&8/1,10/1	12	29	22
University Hospital.....	Ann Arbor, Mich.....	F. S. Hogue	1,562	1	Yes	...	1	0	Varies	24	47	18
Henry Ford Hospital.....	Detroit.....	A. F. Hartman	450	44	Yes	\$42	1	0	7/1	12	26	19
Minneapolis Children's Hospital.....	Minneapolis.....	C. DeFuccio and J. Sullivan	1,280	81	Yes	\$25	2	8	7/1	36	49	22
University Hospitals.....	Minneapolis.....	T. B. Cooley	3,527	78	Yes	\$25	2	12	7/1	24	439	205
Wheatley-Provident Hospital (col.).....	Minneapolis.....	A. B. Johnston	...	...	Yes	\$130	1	2	9/1	12	37	16
St. Louis Children's Hospital.....	Kansas City, Mo.....	F. S. Hogue	920	85	Yes	\$25	1	1	1/1&7/1	12	59	32
St. Louis City Hospital.....	St. Louis.....	A. F. Hartman	1,277	12	Yes	\$50	2	0	7/1	36	96	65
St. Mary's Group of Hospitals.....	St. Louis.....	J. Cook	132	13	Yes	\$40	1	0	7/1	24	10	4
Jersey City Hospital.....	Jersey City, N. J.....	C. DeFuccio and J. Sullivan	3,041	24	Yes	\$25	1	2	1/1&7/1	12	155	89
Cumberland Jewish Hospital.....	Brooklyn.....	T. B. Cooley	894	100	Yes	\$100	1	0	7/1	12	95	51
Kings County Hospital.....	Brooklyn.....	B. Kramer	1,082	42	Yes	\$25	2	0	7/1	34	42	36
Long Island College Hospital.....	Brooklyn.....	L. Krahluk and G. Brookway	1,293	90	Yes	\$100	1	0	7/1	12	57	12
Norwegian Lutheran Deaconesses' Home and Hospital.....	Brooklyn.....	C. A. Weymuller	1,478	100	Yes	\$100	1	0	7/1	12	54	42
Buffalo Children's Hospital.....	Buffalo.....	H. R. Lohnes	637	24	Yes	\$50	1	2	7/1	12	82	54
Queens Children's Hospital.....	Buffalo.....	H. R. Lohnes	275	17	Yes	None	1	0	7/1	12	52	45
Metropolitan Hospital.....	Buffalo.....	H. R. Lohnes	275	65	Yes	\$63	1	2	7/1	48	31	3
Morrisania Hospital.....	Jamaica, N. Y.....	W. C. A. Steffen	5,140	51	Yes	\$50	1	1	7/1	12	189	63
Mount Sinai Hospital.....	New York City.....	R. McIntosh	2,083	100	Yes	\$15	1	2	7/1	12	35	12
New York Children's Hospital.....	New York City.....	C. H. Smith	3,082	40	Yes	\$50	1	11	7/1	12	122	70
New York City Hospital.....	New York City.....	J. T. Simonson	2,039	100	Yes	...	1	6	Quart.	36	193	133
New York City Hospital.....	New York City.....	R. A. Benson	1,321	5	Yes	\$50	2	0	7/1	12	35	24
New York City Hospital.....	New York City.....	L. Barenberg	888	100	Yes	\$15	1	0	7/1	12	117	67
New York City Hospital.....	New York City.....	B. Schick	1,487	100	Yes	\$100	1	1	7/1	12	106	50
New York City Hospital.....	New York City.....	S. Z. Levine	925	100	Yes	\$15	1	1	1/1&7/1	12	69	41
New York City Hospital.....	New York City.....	A. G. DeSanctis	...	53	Yes	\$50	1	1	1/1&7/1	12	38	25
St. Luke's Hospital.....	New York City.....	P. E. Johnson	1,127	23	Yes	None	1	5	7/1	60	121	65
Strong Memorial and Rochester Municipal Hospitals.....	Rochester, N. Y.....	S. W. Clausen	1,181	13	Yes	\$90	1	0	1/1	12	61	25
Sea View Hospital.....	State Island, N. Y.....	B. Schick	434	48	Yes	None	1	0	1/1&7/1	12	...	...
Syracuse Memorial Hospital.....	Syracuse, N. Y.....	E. J. Wynkoop	1,072	63	Yes	\$42	1	3	7/1	12	53	33
Grasslands Hospital.....	Valhalla, N. Y.....	F. D. Barnes	349	100	No	\$100	4	0	1/1&7/1	12	16	8
Duke Children's Hospital.....	Durham, N. C.....	W. C. Davidson	1,186	43	No	None	1	0	7/1	12	61	25
Children's Hospital.....	Akron, O.....	J. G. Kramer	310	86	Yes	\$75	1	0	Varies	24	34	27
Children's Hospital.....	Cincinnati.....	A. G. Mitchell	570	56	Yes	\$42	1	0	7/1	48	90	51
Cincinnati Children's Hospital.....	Cincinnati.....	W. M. Champion	1,048	50	Yes	\$75	1	0	7/1	12	132	63
St. Vincent Charity Hospital.....	Cleveland.....	H. J. Gerstenberger	4,239	70	Yes	\$25	2	11	7/1	36	172	97
University Hospitals.....	Cleveland.....	E. H. Buxter	1,084	87	Yes	*	6	7	7/1	36	176	97
Children's Hospital.....	Columbus, O.....	J. B. Bilderback	152	35	Yes	\$35	1	0	7/1	12	12	4
University of Oregon Medical School Hospitals.....	Portland.....	J. C. Glittings	875	35	Yes	\$25	2	2	7/1	48	104	56
Children's Hospital of the Mary J. Drexel Home.....	Philadelphia.....	J. A. Babbitt	2,388	84	Yes	\$60	3	0	7/1	12	92	29
Hospital of the University of Pennsylvania.....	Philadelphia.....	J. C. Glittings	2,375	100	Yes	\$40	2	0	7/1	12	88	51
Jewish Hospital.....	Philadelphia.....	J. C. Glittings	2,131	54	Yes	None	1	10	7/1	12	91	49
Philadelphia General Hospital.....	Philadelphia.....	H. T. Price	521	53	Yes	\$100	1	0	7/1	12	24	7
St. Christopher's Hospital for Children.....	Philadelphia.....	M. W. Bench	294	28	Yes	None	1	0	7/1	12	41	34
Children's Hospital.....	Pittsburgh.....	W. D. Andersoo	439	31	...	None	1	0	6/15	12	23	9
Roper Hospital.....	Charleston, S. C.....	E. C. Mitchell	1,835	95	Yes	\$100	1	0	7/1	12	...	...
Children's Hospital.....	Charlottesville, Tenn.....	H. Casparis	1,970	34	Yes	\$50	4	0	7/1	12	40	13
John Gaston Hospital.....	Memphis, Tenn.....	L. E. Sutton	3,339	50	Yes	\$35	1	3	7/1	12	210	55
Vanderbilt University Hospital.....	Nashville, Tenn.....	L. E. Sutton	545	71	Yes	\$40	1	0	7/1	12	85	24
Medical College of Virginia, Hospital Division.....	Richmond.....	L. T. Royster	1,340	65	Yes	\$50	1	1	7/1	12	151	24
University of Virginia Hospital.....	University.....	J. Goocoe	1,509	97	Yes	\$32	1	0	7/1	12	111	56
State of Wisconsin General Hospital.....	Madison.....	S. Seeger and R. Greenthal	900	29	Yes	\$35	1	2	7/1	12	91	29
Milwaukee Children's Hospital.....	Milwaukee.....											

## 3. PSYCHIATRY AND NEUROLOGY

## a. NEUROLOGY

		Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Service	Beginning Salary	Residents	Assistant Residents	Services Deaths	Available Training (Months)	Deaths	Autopsies
Los Angeles County Hospital.....	Los Angeles.....	S. D. Ingham.....	1,633	100	Yes	\$10	1	0	4/1	24	375	141
Gallinger Municipal Hospital.....	Washington, D. C.....	J. W. Watts.....	3,046	99	No	\$30	1	0	7/1	12	131	61
University of Chicago Clinics.....	Chicago.....	P. Bailey.....	525	33	Yes	\$25	1	1	1/1&7/1	36	36	30
University Hospitals.....	Iowa City.....	C. Van Epps.....	847	86	Yes	\$20	1	1	7/1	24	26	11
Boston City Hospital.....	Boston.....	T. J. Putnam.....	667	94	Yes	None	1	1	Varies	12	24	13
Massachusetts General Hospital.....	Boston.....	J. B. Ayer.....	332	44	Yes	\$42	1	1	1/1	12	21	12
University Hospital.....	Ann Arbor, Mich.....	C. Camp.....	954	81	Yes	\$25	2	1	7/1	48	35	23
Kings County Hospital.....	Brooklyn.....	J. Smith.....	3,623	100	Yes	\$15	1	12	7/1	24	455	68
Bellevue.....	New York City.....	F. Kennedy.....	283	100	Yes	\$83	1	12	7/1	24	...	...
Central.....	New York City.....	M. Neustaedter.....	1,318	...	No	\$100	6	0	1/1&7/1	12	288	89
Lenox.....	New York City.....	T. K. Davis and R. MacRobert.....	194	24	Yes	\$25	1	0	7/1	12	11	1
Metropolitan Hospital.....	New York City.....	S. P. Jewett.....	303	100	Yes	\$75	1	0	7/1	12	54	5
Montefiore Hosp. for Chronic Diseases..	New York City.....	S. P. Gondhart.....	260	88	Yes	\$50	1	3	1/1&7/1	18	31	27
Mount Sinai Hospital.....	New York City.....	I. Strauss.....	...	55	Yes	\$50	1	2	1/1&7/1	18	...	...
Neurological Institute of New York....	New York City.....	F. Tilney.....	3,031	8	...	\$40	1	11	Varies	36	153	86
Philadelphia Orthopaedic Hospital and Infirmary for Nervous Diseases.....	Philadelphia.....	C. W. Burr and F. W. Sinkler.....	249	31	Yes	\$40	1	0	7/1	12	6	1
Temple University Hospital <sup>1,2</sup> .....	Philadelphia.....	T. Fay.....	501	43	Yes	\$40	1	0	7/1	36	54	24

## b. PSYCHIATRY

Compton.....	Compton, Calif.....	G. E. Myers.....	70	...	No	\$150	1	0	Varies	12	...	...
Stanford.....	San Francisco.....	G. S. Johnson.....	419	3	Yes	\$25	1	2	7/1	12	9	5
University.....	San Francisco.....	W. J. Kerr.....	110	64	Yes	\$25	1	0	7/1	12	...	...
Mendocino State Hospital.....	Talmage, Calif.....	R. O. LeBaron.....	2,784	90	No	\$50	2	0	Varies	36	166	51
Colorado Psychopathic Hospital <sup>1</sup> .....	Denver.....	F. G. Ebaugh.....	942	69	Yes	\$100	1	7	9/1	36	16	9
Neuro-Psychiatric Institute of the Hartford Retreat <sup>1</sup> .....	Hartford, Conn.....	C. C. Burlingame.....	890	...	No	...	9	0	Varies	36	22	4
Connecticut.....	Middletown.....	H. O. Colcomb.....	3,923	100	Yes	\$50	3	0	Varies	36	278	45
New Haven.....	New Haven, Conn.....	E. Kahn.....	353	34	Yes	\$40	1	4	7/1	12	1	1
Delaware State Hospital.....	Farmhurst, Del.....	M. A. Tarumanz.....	1,125	83	Yes	\$50	9	0	7/1	12	97	25
Gallinger Municipal Hospital.....	Washington, D. C.....	D. P. Hickling.....	3,040	99	No	\$30	1	0	7/1	12	131	61
St. Elizabeths Hospital.....	Washington, D. C.....	R. W. Hall.....	6,660	100	No	\$75	12	0	7/1&10/1	12	325	210
Cook County Hospital.....	Chicago.....	F. Gerty.....	6,235	100	No	\$75	3	0	1/1&7/1	12	161	5
Michael Rees.....	Chicago.....	H. D. Singer.....	15	41	Yes	\$100	1	0	7/1	12	...	...
Research and University.....	Chicago.....	D. Sligh.....	113	100	Yes	\$50	3	0	7/1	12	...	...
Elgin State.....	Elgin, Ill.....	C. F. Read.....	6,322	100	No	\$50	1	0	Varies	12	431	164
Central State Hospital.....	Indianapolis.....	M. A. Bahr.....	1,834	100	Yes	\$157	4	0	Varies	36	173	67
Indianapolis City Hospital.....	Indianapolis.....	L. D. Carter.....	523	88	Yes	\$42	1	0	7/1	12	38	14
Logansport State Hospital.....	Logansport, Ind.....	P. D. Williams.....	1,959	96	No	\$142	2	0	Varies	36	149	31
Iowa State.....	Iowa City.....	W. Malamud.....	392	73	Yes	\$150	2	0	7/1	12	3	1
Oswatimie.....	Oswatimie, Kan.....	R. M. Fellows.....	1,670	92	Yes	\$75	3	0	7/1&9/1	12	115	41
Menninger.....	Topeka, Kan.....	W. C. Menninger.....	133	...	Yes	\$120 <sup>c</sup>	4	0	1/1&7/1	12	3	2
U. S. Public Health Service Hospital <sup>23</sup>	Lexington, Ky.....	W. L. Treadway.....	1,507	...	...	\$150	1	0	7/1	12	19	15
Johns Hopkins Hospital.....	Baltimore.....	A. Meyer.....	262	43	Yes	None	1	2	7/1&9/1	12-45	...	...
Spring Grove State Hospital.....	Catonsville, Md.....	S. W. Weltmer.....	...	99	No	\$150	1	0	Varies	12	131	54
Springfield State Hospital.....	Sykesville, Md.....	I. A. Darling.....	3,251	99	Yes	\$100	4	0	7/1	24	200	48
Sheppard and Enoch Pratt Hospital.....	Towson, Md.....	R. McC. Chapman.....	662	5	No	\$100	4	0	Varies	12	9	3
McLean Hospital.....	Belmont, Mass.....	K. J. Tillotson.....	265	6	Yes	\$75	7	0	Varies	12	11	3
...	Boston.....	C. M. Campbell.....	2,121	83	Yes	\$75	8	0	9/1	12	31	11
...	Boston.....	H. F. Norton.....	...	97	No	...	4	0	Varies	36	272	106
...	Boston.....	S. Cobb.....	87	44	Yes	\$42	1	1	1/1	12	...	...
...	Foxboro, Mass.....	W. C. Gaebler.....	1,351	...	Yes	\$45	1	0	7/1	12	94	15
...	Gardner, Mass.....	C. E. Thompson.....	1,530	97	Yes	\$150	2	0	Varies	12	64	25
...	Hathorne, Mass.....	C. A. Bonner.....	...	...	Yes	None	4	0	9/1	12	274	73
...	Medfield, Mass.....	G. A. Troxell.....	...	99	No	\$150	2	0	Varies	24	20	6
...	Northampton, Mass.....	G. C. Randall.....	2,897	90	Yes	\$150	4	0	Varies	36	195	37
...	North Grafton, Mass.....	H. L. Paine.....	1,608	97	Yes	\$150	5	0	Varies	12	69	12
...	Taunton, Mass.....	R. G. Osterheld.....	2,199	83	Yes	\$150	5	0	7/1	12	204	92
...	Westboro, Mass.....	W. E. Lang.....	2,035	84	Yes	\$150	3	0	7/1	24	141	24
...	Worcester, Mass.....	M. Vorshis.....	3,153	90	Yes	None	2	0	7/1	12	254	137
...	Ann Arbor, Mich.....	R. W. Waggoner.....	...	81	Yes	\$25	1	0	7/1	36	1	1
...	Eloise, Mich.....	M. H. Hoffmann.....	4,104	100	Yes	\$150	2	0	Varies	36	253	59
...	Pontiac, Mich.....	P. V. Wagley.....	1,826	...	Yes	\$150	3	3	Varies	36	120	47
...	Traverse City, Mich.....	P. V. Sheets.....	1,600	97	Yes	\$150	4	0	Varies	36	133	37
...	Ypsilanti, Mich.....	G. E. Inch.....	1,528	85	Yes	\$50	3	0	Varies	36	89	40
...	Minneapolis.....	J. C. Michael.....	1,500	100	Yes	\$25	1	0	7/1	12	154	45
...	Minneapolis.....	J. C. McKinley.....	161	12	Yes	\$50	2	0	1/1&7/1	36	...	...
...	Fulton, Mo.....	T. S. Lapp.....	...	96	No	\$167	4	0	Varies	36	167	31
...	State Hospital No. 2.....	O. Mullinax.....	2,563	...	No	\$167	2	0	Varies	36	270	90
...	City Sanitarium.....	L. H. Knlier.....	4,171	82	Yes	\$150	3	8	7/1	12	215	95
...	St. Louis City Hospital.....	St. Louis.....	2,070	100	Yes	\$75	1	1	7/1	24	196	88
...	Hastings State Hospital.....	Ingleside, Neb.....	1,529	85	Yes	\$125	3	0	1/1&7/1	12	87	55
...	Norfolk State Hospital.....	Norfolk, Neb.....	1,053	90	Yes	\$140	2	0	Varies	36	63	28
...	Bishop Clarkson Memorial Hospital.....	Omaha.....	195	5	No	\$50	1	0	7/1	12	6	2
...	New Jersey State Hospital.....	Greystone Park.....	7,269	18	No	\$160	9	0	Varies	36	517	103
...	Albany Hospital.....	Albany, N. Y.....	813	2	Yes	\$25	1	1	7/1	24	56	34
...	Binghamton.....	Binghamton, N. Y.....	3,620	92	No	\$150	3	0	Varies	36	247	113
...	Buffalo City.....	Buffalo.....	916	65	Yes	\$65	2	2	7/1	26	95	2
...	Buffalo State Hospital.....	Buffalo.....	2,909	87	Yes	\$150	3	0	Varies	18	190	52
...	Central Islip State Hospital.....	Central Islip, N. Y.....	6,445	90	Yes	\$150	5	0	Varies	36	397	141
...	Hastings Hillside Hospital.....	Hastings-on-Hudson, N. Y.....	...	...	...	...	...	...	...	...	...	...
...	L. Wender.....	...	102	12	Yes	\$100	1	0	7/1	12	...	...
...	E. V. Gray.....	...	2,409	89	Yes	\$150	5	0	Varies	36	211	96
...	C. S. Parker.....	...	5,416	89	Yes	\$150	8	0	Varies	36	212	88
...	W. Wright.....	...	...	88	Yes	\$150	3	0	Varies	36	253	78
...	K. M. Bowman.....	...	...	100	Yes	\$15	4	6	1/1&7/1	24	760	225
...	O. Diethelm.....	...	342	23	Yes	\$50	1	9	7/1	45	2	1
...	N. D. C. Lewis.....	...	226	60	Yes	\$25	6	0	1/1&7/1	12	...	...
...	J. D. Reichard.....	...	730	100	Yes	\$22	2	0	7/1	12	3	2
...	P. G. Taddiken.....	...	2,670	91	Yes	\$150	14	0	Varies	12	191	75
...	Poughkeepsie, N. Y.....	R. P. Folsom.....	4,421	99	Yes	\$150	7	0	Varies	12	376	115
...	Rochester, N. Y.....	J. L. Van De Mark.....	3,101	85	Yes	\$150	5	0	Varies	12	224	75
...	Rochester, N. Y.....	E. K. Clarke.....	489	63	Yes	\$42	1	0	7/1	12	...	...
...	Utica, N. Y.....	R. H. Hutchings.....	2,522	100	Yes	\$150	1	0	Varies	12	150	61
...	Valhalla, N. Y.....	T. P. Brennan.....	1,517	86	Yes	\$117	1	2	7/1	24	55	40
...	White Plains, N. Y.....	C. O. Cheney.....	643	3	Yes	\$125	6	0	1/1&7/1	24	16	5
...	Durham, N. C.....	R. S. Crispeh.....	500	56	Yes	\$42	1	0	7/1	24	...	...
...	Cincinnati General Hospital.....	E. A. North.....	1,233	57	Yes	...	1	2	7/1	24	62	1
...	Cincinnati State Hospital.....	D. Goldman.....	2,525	...	Yes	\$75	1	0	Varies	36	247	82
...	Cleveland.....	C. W. Stone.....	875	97	Yes	\$42	1	2	7/1	12	87	26

### 3. PSYCHIATRY AND NEUROLOGY—(Continued)

b. PSYCHIATRY (Continued)		Chief of Service	Inpatients Treated	Per Cent Free	Outpatient	Beginning Salary	Residents	Assistant Residents	Service Begins	Available Training (Months)	Deaths	Autopsies
Toledo State Hospital.....	Toledo, O.....	O. O. Fordyce.....	2,646	67	Yes	\$50	2	0	1/1&7/1	12	227	55
Harding Sanitarium.....	Worthington, O.....	G. T. Harding.....	347	..	Yes	\$100	1	0	8/1	12	4	0
Allentown State Hospital.....	Allentown, Pa.....	H. I. Klopp.....	2,462	76	Yes	\$125	3	0	Varies	12	93	4
Danville State Hospital.....	Danville, Pa.....	J. A. Jackson.....	2,369	89	..	\$100	1	0	Varies	12	174	22
Norristown State Hospital.....	Norristown, Pa.....	A. P. Noyes.....	4,036	73	Yes	\$125	6	0	Varies	26	230	22
Instituta of the Pennsylvania Hospital	Philadelphia.....	E. D. Bond.....	517	..	Yes	..	1	1	7/1	12	..	..
Pennsylvania Hospital Dept. for Men-												
tal and Nervous Diseases.....	Philadelphia.....	E. D. Bond.....	277	2	Yes	\$125	4	0	1/1&7/1	12	16	8
Philadelphia General Hospital.....	Philadelphia.....	O. S. English.....	2,402	95	Yes	\$150	2	0	7/1	12	..	..
Temple University Hospital.....	Philadelphia.....	O. S. English.....	2,402	38	Yes	\$150	1	0	7/1	26	330	169
St. Francis Hospital.....	Pittsburgh.....	R. H. Israel.....	2,051	14	Yes	\$50	2	0	9/1	12	133	45
Warren State Hospital.....	Warren, Pa.....	R. H. Israel.....	3,167	82	No	\$125	3	0	Varies	36	163	45
State Hospital for Mental Diseases.....	Howard, R. I.....	S. F. H. Howes.....	3,090	95	Yes	\$150	3	0	Varies	36	199	61
Butler Hospital.....	Providence, R. I.....	A. H. Ruggles.....	339	6	Yes	\$50	3	0	1/1&7/1	12	13	3
Charles V. Chapin Hospital.....	Providence, R. I.....	H. E. Kene.....	468	65	Yes	\$75	1	0	1/1	12	33	13
Galveston State Psychopathic Hospital	Galveston, Tex.....	T. R. Brown.....	400	8	Yes	\$100	6	0	Varies	12	..	..
John Sealy Hospital.....	Galveston, Tex.....	T. R. Brown.....	578	50	Yes	\$50	1	0	7/1	12	26	12
University of Virginia Hospital.....	University.....	D. C. Wilson.....	339	30	Yes	..	1	1	7/1	24	8	3
Western State Hospital.....	Ft. Steilacoom, Wash.....	W. N. Keller.....	3,178	..	Yes	\$25	3	0	7/1	12	276	133
State of Wisconsin General Hospital.....	Madison.....	W. Lorenz.....	..	85	Yes	\$25	1	1	7/1	26	..	..
Milwaukee County Hospital for Mental												
Diseases.....	Wauwatosa, Wis.....	M. Kasak.....	1,492	75	Yes	\$50	3	0	1/1&7/1	12	41	10
Milwaukee Sanitarium.....	Wauwatosa, Wis.....	L. H. Ziegler.....	210	3	No	\$50	1	0	7/1	12	6	0
c. EPILEPSY												
Monson State Hospital.....	Palmer, Mass.....	M. B. Hodskins.....	1,596	95	Yes	\$10	1	0	6/15	12	86	24
Craig Colony.....	Sonyea, N. Y.....	W. T. Shanahan.....	2,492	94	No	\$150	1	0	Varies	12	161	63
d. MENTAL DEFICIENCIES												
Mehlgan Home and Training School..	Lapier.....	E. J. Knaggs.....	2,740	100	Yes	\$150	2	0	Varies	12	78	33

### 4. DERMATOLOGY AND SYPHILOLOGY

Los Angeles County Hospital.....	Los Angeles.....	E. D. Lovejoy.....	554	100	Yes	\$10	2	0	4/1	24	18	10
University of California Hospital.....	San Francisco.....	W. J. Kerr.....	14	64	Yes	\$25	2	0	7/1	12	..	..
University of Chicago Clinics.....	Chicago.....	S. W. Becker.....	131	38	Yes	None	1	0	1/1&7/1	24	..	..
Massachusetts General Hospital.....	Boston.....	C. G. Lane.....	370	44	Yes	\$42	1	1	7/1	12	7	2
University Hospital.....	Ann Arbor, Mich.....	U. Wile.....	1,317	81	Yes	\$25	1	0	Varies	36	2	8
Minneapolis General Hospital.....	Minneapolis.....	S. E. Switzer.....	239	65	Yes	\$25	1	0	Varies	36	7	8
University Hospitals.....	Minneapolis.....	J. C. McKinley.....	183	12	Yes	None	1	0	7/1	12	1	3
Barnard Free Skin and Cancer Hospital	St. Louis.....	M. P. Engman.....	45	100	Yes	\$25	1	0	9/1	12	15	3
Kings County Hospital.....	Brooklyn.....	A. Potter.....	1,695	100	Yes	\$100	1	0	7/1	36	4	5
Buffalo City Hospital.....	Buffalo.....	E. D. Osborne.....	447	65	Yes	\$68	2	3	1/1&7/1	18	16	5
Bellevue Hospital.....	New York City.....	H. Fox.....	787	100	Yes	\$15	1	0	7/1	12	..	..
Metropolitan Hospital.....	New York City.....	F. M. Dearborn.....	85	100	Yes	None	1	0	7/1	12	1	1
Montefiore Hosp. for Chronic Diseases	New York City.....	F. Wise.....	17	85	Yes	\$25	1	0	7/1	12	..	..
N. Y. Post-Graduate Medical School and												
Hospital.....	New York City.....	G. M. MacKee.....	100	13	Yes	None	1	2	4/1,7/1,10/1	24	3	0
Cincinnati General Hospital.....	Cincinnati.....	F. Tauber.....	442	87	Yes	..	1	2	7/1	24	24	6
City Hospital.....	Cleveland.....	H. N. Cole.....	616	97	Yes	\$42	1	1	7/1	24	..	..
University.....	Cleveland.....	H. N. Cole.....	178	85	Yes	\$25	1	1	7/1	24	3	1
Skin and	Philadelphia.....	A. Strickler.....	183	14	Yes	\$50	1	1	7/1	36	7	1
University.....	University.....	D. C. Smith.....	150	30	Yes	\$50	1	1	7/1	36	..	..

### 5. OBSTETRICS AND GYNECOLOGY

a. GYNECOLOGY												
Los Angeles County Hospital.....	Los Angeles.....	H. Shaw and W. Smith	1,783	100	Yes	\$10	3	0	4/1,7/1,10/1	18	19	8
Passavant Memorial Hospital.....	Chicago.....	A. H. Curtis.....	564	7	Yes	None	1	0	1/1	12	..	..
Indiana University Hospitals.....	Indianapolis.....	C. Hable.....	747	82	Yes	\$33	1	0	7/1	12	4	2
Touro Infirmary.....	New Orleans.....	H. E. Miller.....	1,102	35	Yes	\$25	1	4	7/1&9/1	12-48	15	6
Johns Hopkins Hospital.....	Baltimore.....	T. S. Cullen.....	1,699	43	Yes	None	1	1	7/1	24	16	16
University Hospital.....	Baltimore.....	J. M. Hundley, Jr.....	724	47	Yes	None	1	0	1/1	12	23	2
Free Hospital for Women.....	Brookline, Mass.....	F. A. Penherton.....	2,274	79	Yes	\$83	1	0	1/1	12	17	23
Jersey City Hospital.....	Jersey City, N. J.....	C. Kelly and J. Rector	542	90	Yes	\$100	1	0	1/1	36	25	4
Albany.....	Albany, N. Y.....	A. J. Wallingford.....	1,992	2	Yes	\$25	1	1	7/1	36	13	4
Buffalo.....	Buffalo.....	J. E. King.....	555	65	Yes	\$68	1	0	7/1	12	14	6
Buffalo.....	Buffalo.....	J. E. King.....	1,227	3	Yes	\$25	1	0	7/1	12	35	15
Harlem Hospital.....	New York City.....	H. C. Fink.....	1,253	100	Yes	\$15	1	0	7/1	12	..	..
Mount Sinai Hospital.....	New York City.....	S. H. Geist and I. C. Rubin	..	55	Yes	\$50	1	1	1/1&7/1	12	7	3
N. Y. Post-Graduate Medical School and												
Hospital.....	New York City.....	W. T. Danneuth.....	568	13	Yes	\$90	1	0	10/1	12	6	3
Syracuse.....	Syracuse, N. Y.....	N. P. Sears.....	676	43	Yes	None	1	0	7/1	12	7	0
University.....	Cleveland.....	W. H. Weir.....	1,271	35	Yes	\$25	1	4	7/1	36	12	6
Starling-L.....	Columbus, O.....	F. Fletcher and P. J. Reel	369	58	Yes	\$25	1	1	7/1	12	2	2
Graduate University of the University												
of Pennsylvania.....	Philadelphia.....	W. R. Nicholson.....	441	33	Yes	None	1	0	7/1	12	4	1
Elizabeth Steel Magee Hospital.....	Pittsburgh.....	R. R. Huggins.....	891	39	Yes	\$42	2	0	9/1	24	17	1
St. Francis Hospital.....	Pittsburgh.....	B. Z. Cushman.....	737	14	Yes	\$50	1	0	9/1	12	33	7
John Gaston Hospital.....	Memphis, Tenn.....	W. T. Black.....	877	97	Yes	\$32	1	0	7/1	12	..	..

OBSTETRICS-GYNECOLOGY (see page 839)

b. OBSTETRICS												
Los Angeles County Hospital.....	Los Angeles.....	E. N. Lazard.....	5,705	100	Yes	\$10	5	0	1/1&7/1	18	24	16
Hospital for Children.....	San Francisco.....	H. A. Stephenson.....	..	4	Yes	\$25	1	0	7/1	12	7	0
Garfield Memorial Hospital.....	Washington, D. C.....	A. Y. P. Garnett.....	1,266	..	Yes	\$50	1	0	1/1	12	14	9
Chicago Maternity Center.....	Chicago.....	J. B. DeLee.....	6,005	100	Yes	None	1	0	1/1&7/1	12	54	26
Cook County Hospital.....	Chicago.....	P. S. Hillis.....	6,669	100	Yes	\$25	4	0	9/1	12	3	2
Provident.....	Chicago.....	D. M. Santos.....	993	63	Yes	\$50	1	0	1/1&7/1	24	31	2
Research.....	Chicago.....	F. H. Fuhs.....	897	100	Yes	\$30	1	1	1/1&7/1	12	7	0
Indiana.....	Indianapolis.....	H. F. Beckman.....	1,144	82	Yes	\$33	1	0	7/1	36	3	0
Louisville City Hospital.....	Louisville, Ky.....	A. N. Pickett.....	1,183	90	Yes	\$14	1	5	7/1	12	..	..
Touro Infirmary.....	New Orleans.....	W. E. Levy.....	1,005	35	Yes	\$25	1	0	7/1	12	8	7
Baltimore City Hospitals.....	Baltimore.....	L. H. Douglass.....	1,784	99	Yes	\$17	1	2	7/1	12-48	9	..
Johns Hopkins Hospital.....	Baltimore.....	N. J. Enstmann.....	1,832	43	Yes	None	1	3	7/1&9/1	12-48	..	..
Provident Hospital and Free Dispen-												
sary (col.).....	Baltimore.....	L. H. Douglass.....	190	73	Yes	\$25	1	0	10/15	12	2	2
Sinal Hospital.....	Baltimore.....	M. W. Aaronson.....	853	37	Yes	\$50	1	0	7/1	24	5	5
University Hospital.....	Baltimore.....	L. H. Douglass.....	1,092	47	Yes	None	1	2	1/1	18	60	32
Boston Lying-in Hospital.....	Boston.....	C. Irving.....	3,219	10	Yes	None	1	0	7/1	24	41	23
Massachusetts Memorial Hospitals.....	Boston.....	E. W. Smith.....	1,624	31	Yes	\$91	2	0	7/1	24	..	..

## 5. OBSTETRICS AND GYNECOLOGY—(Continued)

b. OBSTETRICS (Continued)			Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Service	Beginning Salary	Residents	Assistant Residents	Service Begins	Available Training (Months)	Deaths	Autopsies
Providence Hospital.....	Detroit.....	J. A. Rieden.....	2,663	10	No	\$100	1	0	7/1	12	9	1	
Cooper Hospital.....	Camden, N. J.....	A. B. Davis.....	1,671	44	Yes	\$100	1	0	7/1	36	41	4	
Margaret Hague Maternity Hospital.....	Jersey City, N. J.....		6,298	52	Yes	\$100	7	0	Quart.	21	153	77	
Cumberland Hospital.....	Brooklyn.....	W. C. Meagher.....	1,230	100	Yes	\$100	1	0	7/1	12	4	2	
Methodist Episcopal Hospital.....	Brooklyn.....	O. P. Humpstone.....	.....	10	Yes	\$90	1	1	1/1&7/1	18	...	...	
Norwegian Lutheran Deaconesses' Home and Hospital.....	Brooklyn.....		818	17	Yes	None	1	1	7/1	12	4	1	
Buffalo.....	Buffalo.....	F. C. Goldsborough.....	669	65	Yes	\$63	1	1	7/1	36	3	0	
Buffalo.....	Buffalo.....	F. C. Goldsborough.....	760	3	Yes	\$25	1	0	7/1	12	1	1	
Millard Fillmore Hospital.....	Buffalo.....	M. Potter.....	1,511	17	Yes	\$25	1	0	7/1	12	5	5	
Fordham Hospital.....	New York City.....	A. C. Butts.....	2,975	100	Yes	\$15	1	0	7/1	12	58	42	
Harlem Hospital.....	New York City.....	F. A. Kassebohm.....	.....	100	Yes	\$15	1	0	7/1	12	...	...	
Lenox Hill Hospital.....	New York City.....	P. H. Williams and R. L. McCreedy.....	812	24	Yes	\$50	1	0	7/1	12	...	...	
Lincoln Hospital.....	New York City.....	E. J. Davin.....	1,832	...	Yes	\$100	1	0	Varies	...	8	...	
Morris N. Y.....	New York City.....	H. Aranow.....	1,940	100	Yes	\$15	1	1	1/1&7/1	12	54	46	
Syracuse Memorial Hospital.....	New York City.....		939	15	Yes	\$128	1	0	7/1	12	2	1	
Syracuse Memorial Hospital.....	Syracuse, N. Y.....	H. Schoeneck.....	1,254	43	Yes	None	1	0	7/1	12	9	3	
Cincinnati General Hospital.....	Cincinnati.....	H. L. Woodward.....	2,038	87	Yes	...	1	2	7/1	24	9	5	
City Hospital.....	Cleveland.....	A. H. Bill.....	1,495	97	Yes	\$42	1	2	7/1	12	...	...	
Mount Sinai Hospital.....	Cleveland.....	M. Garber.....	746	20	Yes	\$60	1	0	7/1	12	...	...	
St. Ana's Maternity Hospital.....	Cleveland.....	J. R. Thompson.....	1,519	5	Yes	\$50	2	0	7/1	12	36	23	
St. John's Hospital.....	Cleveland.....	O. A. O'Connell.....	839	15	...	\$25	1	0	7/1	12	3	0	
St. Luke's Hospital.....	Cleveland.....	A. J. Skeel.....	1,533	15	Yes	\$25	1	1	7/1	24	4	0	
University Hospitals.....	Cleveland.....	A. H. Bill.....	2,233	35	Yes	\$25	1	4	7/1	36	117	36	
Miami Valley Hospital.....	Dayton, O.....	W. A. Ricketts.....	1,357	23	No	\$75	1	0	7/1	12	4	0	
State University and Crippled Children's Hospitals.....	Oklahoma City.....	W. W. Wells.....	569	71	Yes	\$50	1	0	7/1	12	4	0	
George F. Geisinger Memorial Hospital.....	Danville, Pa.....	R. E. Nicodemus.....	571	27	Yes	\$50	1	0	9/1	12	4	2	
Jefferson Medical College Hospital.....	Philadelphia.....	N. W. Vaux.....	1,357	49	Yes	\$50	2	0	7/1&10/1	36	4	3	
Elizabeth Steel Magee Hospital.....	Pittsburgh.....	C. E. Ziegler.....	2,762	39	Yes	\$42	3	0	9/1	12	20	7	
St. Francis Hospital.....	Pittsburgh.....	J. H. Carroll.....	885	14	Yes	\$50	1	0	9/1	12	18	8	
John Gaston Hospital.....	Memphis, Tenn.....	W. T. Pride.....	2,371	97	Yes	\$32	1	0	7/1	12	40	9	
Baylor University Hospital.....	Dallas, Tex.....	O. R. Hannah.....	1,202	20	Yes	\$75	1	1	7/1	12	5	2	
Parkland Hospital.....	Dallas, Tex.....	W. T. Robinson.....	1,700	91	Yes	\$10	1	1	1/1&7/1	24	...	...	
Medical College of Virginia, Hospital Division.....	Richmond.....	H. H. Ware.....	1,095	5	Yes	\$50	1	1	7/1	12	15	6	
c. OBSTETRICS-GYNECOLOGY													
Hillman Hospital.....	Birmingham, Ala.....		2,590	100	Yes	\$40	2	0	7/1	12	60	23	
White Memorial Hospital.....	Los Angeles.....	R. J. Thompson.....	1,636	2	Yes	\$90	2	0	7/1	36	5	2	
Alameda County Hospital.....	Oakland, Calif.....	E. N. Ewer and C. A. DePuy.....	1,655	100	No	\$40	3	0	7/1	12	24	9	
San Francisco Hospital.....	San Francisco.....	W. G. Moore and A. V. Pettit.....	2,174	100	Yes	...	2	2	7/1	12	...	...	
Stanford University Hospitals.....	San Francisco.....	L. Enge.....	1,547	3	Yes	\$25	1	2	7/1	12	11	5	
University of California Hospital.....	San Francisco.....	F. W. Lynch.....	1,239	64	Yes	\$25	1	3	7/1	12	10	8	
Santa Clara County Hospital.....	San Jose, Calif.....	A. Shufelt.....	1,060	100	Yes	\$100	1	0	7/1	12	...	...	
New Haven Hospital.....	New Haven, Conn.....	A. H. Morse.....	1,446	34	Yes	\$40	1	0	7/1	12	13	8	
Columbia Hospital for Women and Lying-In Asylum.....	Washington, D. C.....		3,666	...	Yes	None	2	4	1/1&7/1	18	13	2	
Freedmen's Hospital (col.).....	Washington, D. C.....	J. W. Ross.....	1,639	85	Yes	...	1	1	10/1	12	68	16	
Gallinger Municipal Hospital.....	Washington, D. C.....	H. F. Kaae.....	5,223	99	No	\$30	2	1	7/1	12	277	127	
Grady Hospital.....	Atlanta, Ga.....	J. R. McCord and F. Esbridge.....	5,520	100	Yes	\$50	4	2	6/20	12	72	23	
University Hospital.....	Augusta, Ga.....	R. Torpin.....	2,359	44	Yes	\$45	1	1	7/1	24	66	18	
Chicago Lying-In Hospital and Disp.....	Chicago.....	F. L. Adair.....	3,762	22	Yes	\$32	6	0	1/1&7/1	36	73	57	
Presbyterian Hospital.....	Chicago.....	N. S. Heaney.....	2,665	22	Yes	\$75	1	0	7/1	24	8	1	
St. Luke's Hospital.....	Chicago.....	H. O. Jones.....	1,749	6	Yes	None	2	0	10/1	12	23	14	
University of Chicago Clinics (See Chicago Lying-In Hosp. and Disp.)	Chicago.....												
Indianapolis City Hospital.....	Indianapolis.....	J. W. Hofmann and H. Beckman.....	1,586	63	Yes	\$42	2	0	7/1	12	25	10	
University Hospitals.....	Iowa City.....	E. D. Plass.....	2,755	66	Yes	\$20	2	3	7/1	36	22	13	
University of Kansas Hospitals.....	Kansas City.....	L. A. Calkins.....	932	63	Yes	\$30	1	2	7/1	26	12	9	
Charity Hospital.....	New Orleans.....		3,940	100	Yes	\$25	4	0	7/1	24	49	42	
Maryland General Hospital.....	Baltimore.....	E. H. Kroman and K. B. Boyd.....	722	35	...	\$35	1	0	7/1	12	7	2	
Mercy Hospital.....	Baltimore.....	A. Samuels and E. P. Smith.....	935	69	Yes	\$25	1	0	9/1	12	16	2	
St. Joseph's Hospital.....	Baltimore.....		1,164	23	Yes	\$10	1	1	7/1	24	4	1	
Boston City Hospital.....	Boston.....	R. M. Green.....	5,719	94	Yes	...	2	6	Quart.	34	133	2	
Carney Hospital.....	Boston.....	L. E. Phaneuf.....	719	7	Yes	None	1	2	1/1&1.9/1	12	9	1	
University Hospital.....	Ann Arbor, Mich.....	N. F. Miller.....	2,600	81	Yes	\$25	2	2	7/1	48	54	35	
City of Detroit Receiving Hospital II.....	Detroit.....	W. F. Seeley.....	1,213	100	Yes	\$33	1	1	7/15	48	41	10	
Grace Hospital.....	Detroit.....	B. Anderson.....	1,942	27	Yes	\$30	1	1	9/1	12	5	1	
Harper Hospital.....	Detroit.....	G. Kamperman.....	1,442	12	Yes	\$25	1	2	7/1	36	...	...	
Henry Ford Hospital.....	Detroit.....	J. P. Pratt.....	...	...	Yes	\$100	1	3	9/1	12	33	19	
Herman Kiefer Hospital II.....	Detroit.....	W. F. Seeley.....	3,503	97	No	\$125	2	0	7/1	12	89	47	
Woman's Hospital.....	Detroit.....	H. M. Nelson and L. E. Daniels.....	4,014	1	Yes	\$25	2	7	7/1	48	20	5	
Minneapolis General Hospital I.....	Minneapolis.....	J. A. Urner.....	2,233	63	Yes	\$25	2	0	1/1&7/1	36	24	13	
University Hospitals I.....	Minneapolis.....	J. C. Litzenberg.....	1,360	12	Yes	\$30	2	0	7/1	18	11	10	
Ancker Hospital I.....	St. Paul.....	L. W. Barry.....	4,435	98	Yes	\$50	1	0	7/1	36	33	34	
Jewish Hospital.....	St. Louis.....	S. A. Weintraub and S. F. Abrams.....	1,102	25	Yes	\$63	1	0	7/1	12	9	4	
St. Louis City Hospital.....	St. Louis.....		3,257	100	Yes	\$75	1	4	7/1	36	39	16	
St. Louis Maternity Hospital.....	St. Louis.....	O. H. Schwarz.....	1,923	11	Yes	\$25	2	5	7/1	36	26	29	
St. Luke's Hospital.....	St. Louis.....	J. W. Records.....	1,456	16	Yes	\$75	1	0	7/1	12	12	3	
St. Mary's University.....	St. Louis.....	W. H. Vogt.....	1,853	42	Yes	\$25	6	0	7/1	24	15	7	
Jewish Hospital.....	Omaha.....	E. Sage.....	877	100	Yes	\$50	1	0	7/1	12	12	11	
Kings County Hospital.....	Brooklyn.....	L. S. Schwartz.....	3,795	24	Yes	\$50	2	1	1/1&7/1	24	20	7	
Long Island College Hospital.....	Brooklyn.....	C. Gordon and R. Glick.....	7,157	100	Yes	\$15	3	2	7/1	18	11	3	
Quecas General Hospital.....	Brooklyn.....	A. C. Beck.....	2,221	7	Yes	\$22	1	2	7/1	12	9	2	
Bellerue Hospital.....	Jamaica, N. Y.....	H. P. Meeklen.....	2,569	100	Yes	\$15	1	1	7/1	12	13	8	
Flower-Fifth Avenue Hospital.....	New York City.....	W. E. Studdiford, Jr.....	5,525	100	Yes	...	1	10	7/1	48	...	...	
Lying-In Hospital.....	New York City.....	H. B. Safford.....	1,880	5	Yes	\$50	1	0	7/1	12	2	1	
Metropolitan Hospital.....	New York City.....	H. J. Stander.....	4,822	23	Yes	None	1	10	7/1	60	144	87	
Sloane Hospital for Women.....	New York City.....	H. B. Safford.....	2,785	100	Yes	\$100	1	1	7/1	12	33	23	
Woman's Hospital.....	New York City.....	B. P. Watson.....	4,472	39	Yes	\$50	2	2	7/1	48	...	...	
Strong Memorial and Rochester Mu- nicipal Hospitals.....	New York City.....	G. G. Ward.....	3,665	3	Yes	None	8	0	Quart.	24	56	13	
Duke Hospital.....	Rochester, N. Y.....	K. M. Wilson.....	3,184	63	Yes	\$12	1	2	7/1	12	16	9	
	Durham, N. C.....	B. Carter.....	2,149	56	Yes	\$12	1	4	7/1	48	53	49	

Numerical and other references will be found on page 847.

## 5. OBSTETRICS AND GYNECOLOGY—(Continued)

c. OBSTETRICS-GYNECOLOGY (Continued)		Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Service	Beginning Salary	Residents	Assistant Residents	Service Begins	Available Training (Months)	Deaths	Attended
Huron Road Hospital.....	East Cleveland, O.....	S. C. Runnels.....	1,713	2	Yes	\$50	1	0	7/1	12	4	3
University of Oregon Medical School Hospitals.....	Portland.....	R. E. Watkins.....	1,259	100	Yes	\$30	1	2	7/1	36	8	6
Hosp. of the University of Pennsylvania.....	Philadelphia.....	C. C. Norris.....	2,615	28	Yes	None	3	0	9/1	36	10	2
Kensington Hospital for Women.....	Philadelphia.....	F. A. Schumann.....	2,530	25	Yes	\$25	3	0	1/1&7/1	24	41	22
Pennsylvania Hospital.....	Philadelphia.....	R. A. Kimbrough, Jr. and C. B. Lull.....	3,793	28	Yes	\$20	3	0	1/1,7/1,9/1	12	17	6
Philadelphia General Hospital.....	Philadelphia.....	A. J. Bulst and L. A. Wilson.....	4,706	95	Yes	\$100	1	0	7/1	12	...	...
Roper Hospital.....	Charleston, S. C.....	A. J. Bulst and L. A. Wilson.....	1,988	71	Yes	\$40	1	0	7/1	12	57	13
Nashville General Hospital.....	Nashville, Tenn.....	W. C. Dixon and M. S. Lewis.....	1,643	90	Yes	\$35	1	1	7/1	24	17	3
Vanderbilt University Hospital.....	Nashville, Tenn.....	L. E. Burch.....	675	29	Yes	\$35	1	3	7/1	12	7	4
John Sealy Hospital.....	Galveston, Tex.....	W. Cooke.....	1,070	50	Yes	\$50	1	0	7/1	12	7	4
University of Virginia Hospital.....	University.....	T. J. Williams.....	1,134	30	Yes	\$50	1	1	7/1	24	11	5
State of Wisconsin General Hospital.....	Madison.....	J. Harris.....	...	85	Yes	\$25	1	2	7/1	36	...	...
Millwaukee County Hospital.....	Wauwatosa, Wis.....	E. H. Gramling.....	2,107	97	Yes	\$100	1	0	7/10	12	46	11

## 6. SURGERY

a. GENERAL SURGERY		Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Service	Beginning Salary	Residents	Assistant Residents	Service Begins	Available Training (Months)	Deaths	Attended
Hillman Hospital.....	Birmingham, Ala.....	J. N. Mason and D. S. Moore.....	1,445	100	Yes	\$100	2	0	7/1	12	133	41
Employees' Hospital of the Tennessee Coal, Iron and Railroad Company.....	Fairfield, Ala.....	L. Noland.....	2,514	..	Yes	\$100	1	0	7/1	12	56	14
Fresno County General Hospital.....	Fresno, Calif.....	J. H. Pettis.....	2,845	99	Yes	\$90	1	0	7/1	12	130	40
Cedars of Lebanon Hospital.....	Los Angeles.....	S. Gendel.....	4,501	18	Yes	\$75	1	0	7/1	12	83	43
Los Angeles County Hospital.....	Los Angeles.....	H. Shoemaker.....	4,363	100	Yes	\$10	6	0	4/1&10/1	36	821	151
Whilo Memorial Hospital.....	Los Angeles.....	G. Thomas.....	692	2	Yes	\$90	1	0	7/1	36	29	10
Alameda County Hospital.....	Oakland, Calif.....	L. P. Adams and C. A. Dukes.....	2,055	100	No	\$40	1	3	7/1	12	162	55
San Bernardino County Charity Hosp.	San Bernardino, Calif.....	C. G. Hilliard.....	631	100	Yes	\$100	1	0	7/1	12	78	34
San Diego County General Hospital.....	San Diego, Calif.....	M. C. Harding.....	4,980	100	Yes	\$75	1	0	7/1	12	...	...
Hospital for Children.....	San Francisco.....	A. R. Kilgore.....	1,026	4	Yes	\$25	1	0	7/1	12	11	2
Mary's Help Hospital.....	San Francisco.....	I. W. Thorne.....	1,347	5	Yes	\$72	1	0	7/1	12	33	10
Mount Zion Hospital.....	San Francisco.....	H. Brunn.....	1,508	16	Yes	\$50	1	0	6/15	12	46	17
St. Luke's Hospital.....	San Francisco.....	A. Weeks.....	1,620	8	Yes	\$100	1	0	7/1	12	61	26
San Francisco Hospital.....	San Francisco.....	H. Brunn and L. Eloesser.....	3,725	100	No	..	4	5	7/1	12	...	...
Stanford University Hospitals.....	San Francisco.....	E. Holman.....	1,641	3	Yes	\$25	1	3	7/12	12	57	27
University of California Hospital.....	San Francisco.....	H. C. Nasfzger.....	1,236	64	Yes	\$25	1	7	7/1	12	40	29
Santa Clara County Hospital.....	San Jose, Calif.....	D. R. Wilson.....	2,780	100	Yes	\$135	1	0	7/1	12	...	...
Colorado General Hospital.....	Denver.....	C. F. Hegner.....	661	61	Yes	\$75	1	1	7/1	24	73	29
Grace Hospital.....	New Haven, Conn.....	T. Russell.....	1,951	10	Yes	\$90	1	1	7/1	24	64	29
New Haven Hospital.....	New Haven, Conn.....	S. C. Harvey.....	2,578	34	Yes	\$40	1	6	1/1&7/1	12	117	58
Central Dispensary and Emergency Hospital.....	Washington, D. C.....	J. P. Mitchell.....	4,832	17	Yes	\$30	1	2	6/15	24	...	...
Freedmen's Hospital (col.).....	Washington, D. C.....	E. L. Howes.....	904	85	Yes	..	1	1	7/1	12	33	16
Gallinger Municipal Hospital.....	Washington, D. C.....	C. S. White.....	1,997	99	No	\$30	1	3	7/1	12	137	25
Garfield Memorial Hospital.....	Washington, D. C.....	H. H. Kerr.....	3,574	..	Yes	\$50	1	1	7/1	12	123	17
Washington Hospital.....	Washington, D. C.....	J. A. Cahill.....	2,037	6	Yes	..	1	0	7/1	12	27	11
Atlanta, Ga.....	Atlanta, Ga.....	J. H. Sherman.....	3,146	100	Yes	\$50	2	3	6/20	12	200	108
Augusta, Ga.....	Augusta, Ga.....	N. M. Pery.....	2,645	41	Yes	\$45	1	2	7/1	12	130	39
Chicago.....	Chicago.....	L. Davis.....	1,793	16	Yes	None	3	0	1/1	12	42	21
Chicago.....	Chicago.....	V. C. David.....	1,617	7	Yes	None	2	0	7/1	12	68	41
Chicago.....	Chicago.....	C. G. Roberts.....	2,065	63	Yes	\$30	1	0	9/1	12	66	32
Chicago.....	Chicago.....	E. Oldberg.....	1,682	100	Yes	\$30	1	2	9/1	36	54	29
Chicago.....	Chicago.....	H. B. Jones.....	4,820	6	Yes	None	5	0	7/1	12	112	69
Chicago.....	Chicago.....	D. B. Phenister.....	1,562	38	Yes	\$25	1	4	1/1&7/1	60	29	15
Chicago.....	Chicago.....	R. W. McNealey.....	1,551	23	Yes	\$75	1	0	1/1&7/1	12	64	45
Chicago.....	Chicago.....	F. Christopher.....	1,937	10	Yes	\$83	1	0	7/1	12	133	20
Indianapolis.....	Indianapolis.....	M. N. Hadley.....	1,266	88	Yes	\$42	2	0	7/1	12	123	97
Indianapolis.....	Indianapolis.....	W. D. Gatch.....	1,415	82	Yes	\$33	2	0	7/1	12	29	15
Iowa City.....	Iowa City.....	P. R. Peterson.....	2,889	86	Yes	\$20	1	6	7/1	24	71	30
Kansas City, Kan.....	Kansas City, Kan.....	T. G. Orr.....	1,031	66	Yes	\$50	4	0	7/1	12	89	15
Lexington, Ky.....	Lexington, Ky.....	O. B. Bird.....	1,154	2	No	\$50	1	1	7/1	48	301	19
Louisville City Hospital.....	Louisville, Ky.....	J. D. Hancock.....	6,404	90	Yes	\$14	18	7	7/1	12	80	68
St. Joseph Infirmary.....	Louisville, Ky.....	U. Maes & A. Ochsner.....	2,269	15	Yes	\$50	1	0	7/1	48	190	99
Charity Hospital.....	New Orleans.....	I. Colon.....	3,804	100	Yes	\$25	3	6	7/1	12	...	...
Touro Infirmary.....	New Orleans.....	A. M. Shipley.....	3,600	35	Yes	\$25	1	0	7/1	24	245	89
Baltimore City Hospitals.....	Baltimore.....	E. Novak.....	2,617	99	Yes	\$17	1	4	7/1	12	8	5
Bon Secours Hospital.....	Baltimore.....	T. S. Cullen.....	385	25	Yes	\$30	1	1	7/1	12	50	55
Church Home and Infirmary.....	Baltimore.....	D. B. Lewis.....	1,567	25	Yes	\$20	1	2	7/1	12	112	35
Johns Hopkins Hospital.....	Baltimore.....	R. P. Bay.....	2,091	43	Yes	None	1	6	7/1&9/1	12-24	115	15
Maryland General Hospital.....	Baltimore.....	W. D. Wise.....	2,374	35	Yes	\$35	1	1	7/1	24	61	15
Mercy Hospital.....	Baltimore.....	J. M. T. Finney, Jr.....	1,079	60	Yes	\$50	1	4	9/1	24	...	...
Provident Hospital and Free Dispensary.....	Baltimore.....	G. A. Stewart.....	637	73	Yes	\$23	1	2	10/15	48	49	9
St. Agi.....	Baltimore.....	A. Ullman.....	2,235	32	Yes	None	1	2	7/1&10/1	12	73	6
St. Jos.....	Baltimore.....	C. W. Maxson.....	1,376	28	Yes	\$10	1	2	7/1	24	141	21
Sinai.....	Baltimore.....	J. M. T. Finney, Jr.....	1,198	37	Yes	\$50	1	3	7/1	12	82	11
South.....	Baltimore.....	A. M. Shipley.....	2,914	46	Yes	\$12	1	5	7/1	12	113	49
Union.....	Baltimore.....	C. Marvel.....	3,963	16	Yes	None	1	5	7/1	24	113	47
University Hospital.....	Baltimore.....	C. G. Mikter.....	2,597	47	Yes	\$20	1	2	7/1	12	108	84
West Baltimore General Hospital.....	Baltimore.....	J. J. Walker.....	899	36	No	\$39	1	1	1/1	12	512	23
Beth Israel.....	Boston.....	E. B. Ladd.....	2,303	39	Yes	..	5	1	Varies	12	49	...
Boston City.....	Boston.....	W. B. Churchill and A. W. Allen.....	10,086	04	Yes	\$56	1	1	9/1	24	154	37
Children's.....	Boston.....	H. M. Chute.....	1,525	1	Yes	\$42	2	2	1/1&7/1	24	78	37
Massachusetts General Hospital.....	Boston.....	E. C. Cutler.....	3,839	44	Yes	\$91	2	0	5/1	16	123	63
Massachusetts Memorial Hospitals.....	Boston.....	P. E. Truesdale.....	3,169	31	Yes	\$42	1	5	Varies	12	47	7
Peter Bent Brigham Hospital.....	Cambridge, Mass.....	W. C. Seelye.....	2,830	46	Yes	None	4	0	1/1&7/1	12	26	29
Cambridge Hospital.....	Fall River, Mass.....	F. Collier.....	542	18	Yes	\$100	1	0	7/1	12	69	11
Truesdale Hospital.....	Worcester, Mass.....	A. W. Blain and I. G. Downer.....	2,370	14	Yes	\$100	1	0	9/1	36	150	21
Memorial Hospital.....	Ann Arbor, Mich.....	C. F. Vale.....	2,970	81	Yes	\$25	8	14	7/1	12	46	13
University Hospital.....	Detroit.....	F. A. Kelly.....	1,145	...	Yes	\$75	3	0	7/1	24	...	...
Alexander Blain Hospital.....	Detroit.....	C. D. Brooks.....	5,607	100	Yes	\$50	1	5	7/15	36	326	87
City of Detroit Receiving Hospital.....	Detroit.....	R. D. McClure.....	4,236	27	Yes	\$30	1	1	9/1	12	255	51
Grace.....	Detroit.....	G. M. O'Brien.....	10,014	12	No	\$25	1	7	7/1	36	...	...
Harper.....	Detroit.....	...	...	...	Yes	\$130	1	19	9/1	12	109	40
Henry.....	Detroit.....	...	...	...	Yes	\$130	1	0	7/1	12	156	15
Provid.....	Detroit.....	...	...	...	No	\$100	1	0	7/1	12	...	...



6. SURGERY—(Continued)

a. GENERAL SURGERY (Continued)		Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Service	Beginning Salary	Residents	Assistant Residents	Service Begins	Available Training (Months)	Deaths	Autopsies
Eloise Hospital (Dr. William J. Seymour Hospital) .....	Eloise, Mich.	C. R. DeFever .....	1,834	98	Yes	\$125	1	0	7/1	12	103	59
Hurley Hospital .....	Flint, Mich.	R. S. Morrish .....	1,670	60	No	\$100	1	0	7/15	12	86	32
Butterworth Hospital .....	Grand Rapids, Mich.	G. H. Southwick .....	2,869	15	No	\$125	1	0	7/15	36	109	35
Minneapolis General Hospital <sup>1</sup> .....	Minneapolis	A. A. Zierold .....	1,652	85	Yes	\$25	7	0	1/1&7/1	42	181	35
University Hospitals <sup>2</sup> .....	Minneapolis	O. H. Wangenstein .....	1,355	12	Yes	\$50	5	0	7/1	36	83	62
Ancker Hospital .....	St. Paul	A. R. Colvin .....	3,536	98	Yes	\$50	1	2	7/1	36	167	110
St. Louis .....	Clayton, Mo.	F. W. Bailey .....	1,093	98	Yes	\$50	1	0	7/1	12	90	69
St. Mary .....	Kansas City, Mo.	J. E. Castles .....	1,300	15	No	\$50	1	0	7/1	12	38	33
Barnes Hospital <sup>2</sup> .....	St. Louis	E. A. Graham .....	3,264	17	Yes	\$25	1	7	7/1	36	203	131
DePaul Hospital .....	St. Louis	J. W. Thompson .....	1,517	22	...	\$25	1	1	7/1	36	58	16
Homer G. Phillips Hospital for Colored .....	St. Louis	J. W. Stewart .....	1,462	100	Yes	\$75	1	1	7/1	12	53	23
Jewish Hospital .....	St. Louis	M. W. Myer .....	1,176	25	Yes	\$42	1	1	7/1	12	67	35
St. Louis City Hospital .....	St. Louis	...	3,393	100	Yes	\$75	1	0	7/1	12	67	35
St. Luke's Hospital .....	St. Louis	...	2,292	16	Yes	\$75	1	0	7/1	12	67	35
St. Mary's Group of Hospitals .....	St. Louis	W. T. Coughlin .....	2,414	42	Yes	\$100	1	0	12/1	36	148	32
Cooper Hospital .....	Camden, N. J.	P. M. McEray .....	1,871	44	Yes	\$100	3	2	10/1	24	202	29
Jersey City Hospital .....	Jersey City, N. J.	E. Burke .....	4,016	90	Yes	\$100	1	0	1/1	12	75	13
Mountainside Hospital .....	Montclair, N. J.	...	971	8	Yes	\$100	1	0	7/1	12	47	22
Burlington County Hospital .....	Mount Holly, N. J.	H. E. Taylor .....	900	36	Yes	\$100	1	0	7/1	12	47	22
Albany Hospital .....	Albany, N. Y.	J. L. Donhauser .....	2,810	2	Yes	\$25	1	2	7/1	36	86	61
Coney Island Hospital .....	Brooklyn	D. A. McAtter .....	3,216	100	Yes	\$100	1	0	7/1	12	100	53
Cumberland Hospital .....	Brooklyn	M. N. Foote .....	1,553	100	Yes	\$100	1	1	7/1	12	51	23
Jewish Hospital .....	Brooklyn	L. M. Davidoff .....	2,886	24	Yes	...	1	3	1/1&7/1	24	121	36
Kings County Hospital .....	Brooklyn	R. Barber and E. Fiske .....	14,787	100	Yes	\$15	3	2	1/1&7/1	12	717	139
Long Island College Hospital .....	Brooklyn	E. Goetsch .....	2,047	7	Yes	\$22	1	3	7/1	12	67	7
Norwegian Lutheran Deaconesses' Home and Hospital .....	Brooklyn	...	1,724	17	Yes	None	1	0	7/1	12	86	21
Buffalo City Hospital .....	Buffalo	H. A. Smith .....	2,035	65	Yes	\$68	2	2	7/1	60	128	20
Buffalo General Hospital .....	Buffalo	T. Wright .....	3,217	3	Yes	\$25	1	4	7/1	12	157	64
Deaconess Hospital .....	Buffalo	...	3,400	1	...	\$100	1	0	7/1	12	101	37
Millard Fillmore Hospital .....	Buffalo	G. Critchlow .....	1,705	17	Yes	\$25	1	1	7/1	12	76	28
Clifton Springs Sanitarium and Clinic .....	Clifton Springs, N. Y.	A. S. Taylor .....	702	10	No	\$50	1	0	7/1	36	17	11
Meadowbrook Hospital .....	Hempstead, N. Y.	A. S. Warinner and C. A. Hetteshelmer .....	1,080	89	No	\$75	2	0	7/1	12	100	46
Queens General Hospital .....	Jamaica, N. Y.	F. N. Denly .....	3,017	100	Yes	\$15	1	1	7/1	12	190	151
Charles S. Wilson Memorial Hospital <sup>2</sup> .....	Johnson City, N. Y.	O. B. Whittemore .....	1,887	2	Yes	\$75	1	0	7/1	36	28	20
Bellevue Hospital <sup>2</sup> .....	New York City	...	10,168	100	Yes	\$53	2	6	1/1&7/1	30	...	...
Flower-Fifth Avenue Hospital .....	New York City	C. A. Burrett .....	2,364	5	Yes	\$50	2	0	7/1	12	125	28
Metropolitan Hospital .....	New York City	J. H. Fobes .....	1,195	100	Yes	\$100	2	0	7/1	12	84	5
Montefiore Hosp. for Chronic Diseases .....	New York City	A. A. Berg .....	166	88	Yes	\$100	1	2	1/1&7/1	12	23	20
Mount Sinai Hospital <sup>18</sup> .....	New York City	R. Colt and J. H. Garlock .....	...	55	Yes	\$125	3	3	1/1&7/1	12	181	121
New York Hospital .....	New York City	G. J. Heuer .....	4,473	23	Yes	None	3	13	7/1	72	108	46
New York Polyclinic Medical School and Hospital .....	New York City	...	1,973	15	Yes	None	8	0	Quart.	24	89	31
New York Post-Graduate Medical School and Hospital .....	New York City	T. H. Russell .....	2,829	13	Yes	\$30	2	16	Quart.	24	101	40
New York Society for the Relief of the Ruptured and Crippled .....	New York City	C. G. Burdick .....	2,040	10	Yes	\$20	4	0	Quart.	12	24	11
Presbyterian Hospital .....	New York City	A. O. Whipple .....	3,424	30	Yes	\$53	2	11	7/1	12	...	...
Genesee Hospital .....	Rochester, N. Y.	C. Sumner .....	2,532	14	Yes	\$75	1	0	7/1	12	90	33
Rochester General Hospital .....	Rochester, N. Y.	H. L. Prince .....	4,619	21	Yes	\$50	1	1	7/1	12	96	54
Strong Memorial and Rochester Municipal Hospitals .....	Rochester, N. Y.	J. J. Norton .....	2,680	68	Yes	\$42	1	5	7/1	12	198	129
Hospital of the Good Shepherd .....	Syracuse, N. Y.	A. G. Swift .....	3,625	2	No	\$88	1	1	7/1	12	63	35
Grasslands Hospital .....	Valhalla, N. Y.	G. C. Adie .....	601	86	Yes	\$75	1	2	7/1	36	67	43
Watts Hospital .....	Durham, N. C.	D. Hart .....	1,828	56	Yes	\$42	1	8	7/1	48	95	50
...	Durham, N. C.	F. Roberson .....	2,656	22	Yes	\$50	1	1	7/1	12	8	2
...	Rutherfordton, N. C.	M. H. Biggs .....	604	27	Yes	None	1	0	7/1	12	67	31
...	Winston-Salem, N. C.	A. deT. Volk .....	1,210	39	Yes	\$50	1	1	7/1	36	67	31
...	Akron, O.	L. W. Reynolds .....	5,097	30	Yes	\$103	1	3	7/1	36	171	88
...	Akron, O.	E. C. Banker .....	1,075	20	No	\$40	1	0	7/1	12	45	28
...	Canton, O.	H. M. Schluffel .....	2,631	23	No	\$100	1	0	7/1	12	113	29
...	Cincinnati	M. R. Reid .....	2,839	87	Yes	...	2	14	9/1	72	266	110
...	Cincinnati	W. R. Griess .....	855	5	No	\$75	1	0	7/1	12	36	6
...	Cincinnati	J. Maloney .....	4,188	5	No	\$35	4	0	7/1	36	125	25
...	Cincinnati	J. L. Ransohoff .....	2,504	20	Yes	\$45	2	0	7/1	12	34	13
...	Cleveland	C. H. Lenhart .....	2,325	97	Yes	\$42	2	0	1/1&7/1	18	204	142
...	Cleveland	M. E. Blahd .....	2,348	20	Yes	\$60	2	0	7/1	12	69	16
...	Cleveland	J. F. Corrigan .....	3,520	23	Yes	\$60	3	0	7/1	12	104	25
...	Cleveland	G. P. O'Malley .....	1,160	18	No	\$40	2	0	7/1	12	82	13
...	Cleveland	C. A. Bowers .....	3,355	18	Yes	\$25	1	3	7/1	48	165	34
...	Cleveland	H. B. Wright .....	4,431	35	Yes	...	1	0	7/1	12	216	47
...	Cleveland	C. H. Lenhart .....	4,789	33	Yes	\$25	3	4	7/1	36	204	114
...	Columbus, O.	...	1,504	58	Yes	\$25	2	4	7/1	24	93	49
...	Dayton, O.	R. Austin .....	3,366	23	No	\$75	1	0	7/1	12	143	33
...	East Cleveland, O.	H. L. Frost .....	1,699	2	Yes	\$50	1	0	7/1	12	73	20
...	Youngstown, O.	J. M. Ranz .....	3,014	3	No	\$50	1	1	7/1	12	112	14
...	Oklahoma City	...	3,990	11	No	\$50	1	1	7/1	12	87	22
...	Oklahoma City	R. M. Howard .....	1,375	71	Yes	\$50	1	0	7/1	12	81	36
...	Portland	T. M. Joyce .....	879	100	Yes	\$30	1	2	7/1	36	78	44
...	Abington, Pa.	D. B. Pfeiffer and W. M. Sylvester .....	1,580	25	Yes	None	1	0	7/1	12	72	20
...	Bethlehem, Pa.	W. L. Estes, Jr. ....	...	19	Yes	\$50	1	0	7/1	12	...	...
...	Danville, Pa.	H. L. Foss .....	1,756	27	Yes	\$50	1	0	9/1	12	80	33
...	Philadelphia	C. F. Mitchell and E. B. Hodge .....	2,375	20	Yes	\$120	1	0	7/1	12	251	24
Graduate Hospital of the University of Pennsylvania .....	Philadelphia	W. Bates & W. E. Lee .....	1,191	33	Yes	None	2	0	7/1	12	106	23
Jewish Hospital .....	Philadelphia	...	2,734	31	No	None	1	0	6/15	12	104	55
Pennsylvania Hospital .....	Philadelphia	W. L. Lee and J. L. B. Flick .....	1,787	28	Yes	\$20	2	0	1/1	12	94	54
...	Philadelphia	...	2,550	95	Yes	\$100	2	0	7/1	12	...	...
...	Philadelphia	W. W. Babcock .....	1,638	28	Yes	\$10	2	0	7/1	36	70	32
...	Pittsburgh	O. C. Gauh .....	1,757	54	Yes	\$5	1	0	9/1	12	112	16
...	Pittsburgh	E. W. Meredith .....	543	50	Yes	\$15	1	0	7/1	12	15	5
...	Pittsburgh	...	2,721	14	Yes	\$50	1	0	9/1	12	56	5
...	Reading, Pa.	W. A. Lebkueher .....	1,346	42	Yes	\$53	2	0	7/1	12	103	63
...	Sayre, Pa.	D. Guthrie .....	3,065	50	No	\$75	2	0	7/1	24	65	30
...	Charleston, S. C.	R. S. Cathcart .....	1,798	71	Yes	\$40	2	0	7/1	12	105	37
...	Chattanooga, Tenn.	...	2,645	5	No	\$100	1	2	7/1	12	161	49
...	Memphis, Tenn.	J. L. McGehee .....	1,923	57	Yes	\$72	1	1	7/1	12	176	50
...	Nashville, Tenn.	L. W. Edwards .....	1,174	59	Yes	\$35	1	1	7/1	24	87	24

## 6. SURGERY—(Continued)

a. GENERAL SURGERY (Continued)		Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Service	Beginning Salary	Residents	Assistant Residents	Service Begins	Available for Training (Months)	Dentist	Autopsies
Vanderbilt University Hospital.....	Nashville, Tenn.....	D. Brooks.....	2,006	29	Yes	\$35	1	3	7/1	12	118	62
Baylor University Hospital.....	Dallas, Tex.....	C. W. Flynn.....	4,471	20	Yes	\$50	1	1	7/1	12	110	...
Parkland Hospital.....	Dallas, Tex.....	L. Hudson.....	2,317	91	Yes	\$10	2	2	1/1&7/1	12	...	...
John Seaford Hospital.....	Galveston, Tex.....	A. O. Singleton.....	1,771	50	Yes	\$20	1	0	7/1	12	...	...
Norfolk General Hospital.....	Norfolk, Va.....	.....	3,514	26	Yes	\$50	1	0	7/1	12	65	11
Richmond Division.....	Richmond.....	L. A. Digger.....	2,745	5	Yes	\$50	2	5	7/1	12	194	55
University of Charleston.....	Charleston, W. Va.....	E. P. Lehman.....	1,571	30	Yes	a	1	1	7/1	43	111	33
State of W. Va. Hospital.....	Madison, W. Va.....	J. E. Cannaday.....	2,681	10	Yes	\$25	1	0	7/1	36	91	21
St. Joseph's Hospital.....	Milwaukee.....	E. R. Schmidt.....	.....	85	Yes	\$25	3	5	7/1	36	...	...
St. Mary's Hospital.....	Milwaukee.....	F. Stratton.....	2,539	13	.....	\$40	1	0	7/1	12	67	15
Milwaukee.....	Milwaukee.....	W. O. F. Witte.....	3,009	7	Yes	\$90	1	0	7/1	12	76	63
Wauwatosa, Wis.....	Wauwatosa, Wis.....	F. B. McMahon.....	4,967	07	Yes	\$100	3	0	7/16	12	114	57
b. NEUROSURGERY												
University of California Hospital.....	San Francisco.....	H. O. Naffziger.....	410	64	Yes	\$25	1	0	7/1	12	25	15
Presbyterian Hospital.....	Chicago.....	A. Verbrughe.....	329	22	Yes	None	1	0	7/1	24	15	8
Reserve.....	Chicago.....	E. Oldberg.....	183	100	Yes	\$30	1	0	9/1	24	30	20
Boston.....	Boston.....	D. Munro.....	410	04	Yes	None	1	1	Varies	36	65	9
Massachusetts.....	Boston.....	W. J. Mixer.....	151	44	Yes	\$42	1	0	1/1	12	33	15
Henry.....	Detroit.....	A. S. Crawford.....	.....	.....	Yes	\$150	1	0	0/1	12	36	10
Jewish.....	Brooklyn.....	L. M. Davidoff.....	14	24	Yes	\$50	1	0	1/1	12	3	3
Kings C.....	Brooklyn.....	E. J. Browder.....	.....	100	Yes	\$15	1	1	7/1	24	169	5
Neurolo.....	New York City.....	B. P. Stookey.....	715	8	Yes	\$40	1	3	Varies	36	...	...
Strong Memorial and Rochester Mu- nicipal Hospitals.....	Rochester, N. Y.....	W. P. Van Wagenen.....	335	63	Yes	\$42	1	0	7/1	12	...	...
Hosp. of the.....	Philadelphia.....	F. C. Grant.....	199	23	Yes	None	1	0	7/1	12	51	33
Temple Univ.....	Philadelphia.....	T. S. Foy.....	591	43	Yes	\$40	1	0	7/1	36	54	24
Medical College of Virginia, Hospital Division.....	Richmond.....	O. C. Coleman.....	1,135	5	Yes	\$50	1	1	7/1	12	105	54
c. THORACIC SURGERY												
San Francisco Hospital.....	San Francisco.....	.....	.....	100	.....	a	1	0	7/1	12	...	...
Norwich State Tuberculosis Sanato- rium (Unas on Thames).....	Norwich, Conn.....	R. G. Urquhart.....	150	...	Yes	\$150	1	1	7/1	24	10	9
City of Chicago Municipal Tuberculosis Sanatorium.....	Chicago.....	K. J. Henriksen.....	.....	100	Yes	\$100	2	0	7/1	24	...	...
Sanatorium Division of the Boston City Hospital.....	Boston.....	H. Binney.....	570	100	No	\$150	1	0	Varies	12	...	...
University Hospital.....	Ano Arbor, Mich.....	J. Alexander.....	365	81	Yes	\$23	0	0	7/1	60	23	19
Homer Polk Tuberculosis Hospital.....	Oneonta, N. Y.....	E. F. Butler.....	103	50	Yes	\$100	1	1	10/1	36	3	1
Sea View Hospital.....	Staten Island, N. Y.....	P. N. Coryllos.....	475	100	No	\$100	4	1	1/1&7/1	18	65	81
City Hospital.....	Cleveland.....	.....	.....	07	Yes	\$42	1	0	7/1	12	...	...
d. INDUSTRIAL SURGERY												
Indianapolis City Hospital.....	Indianapolis.....	M. N. Hadley.....	807	83	.....	\$42	1	0	7/1	12	75	10
e. FRACTURES												
City of Detroit Receiving Hospital....	Detroit.....	A. D. Laferte and A. G. Goetz.....	1,293	100	Yes	\$83	1	1	7/15	24	63	0
Rhode Island Hospital.....	Providence.....	M. S. Danforth.....	569	39	Yes	\$50	1	0	9/1	12	...	...
f. PLASTIC SURGERY												
Kings County Hospital.....	Brooklyn.....	W. A. Conkley.....	.....	100	Yes	\$15	1	0	7/1	12	19	1
Graduate Hospital of the University of Pennsylvania.....	Philadelphia.....	R. H. Ivy.....	.....	33	Yes	None	1	0	7/1	12	...	...
g. ANESTHESIA												
Hartford Hospital.....	Hartford, Conn.....	R. M. Tovell.....	11,500	4	.....	\$50	7	0	1/1&7/1	24	645	347
University of Chicago Clinics.....	Chicago.....	H. Livingstone.....	6,838	83	.....	None	1	2	1/1&7/1	12	241	170
Methodist Episcopal Hospital.....	Indianapolis.....	J. M. Whitehead.....	22,200	11	.....	\$100	1	2	7/1	24	616	143
Massachusetts General Hospital.....	Boston.....	H. K. Beecher.....	15,630	44	.....	\$12	1	0	7/1	12	426	221
.....	Boston.....	E. B. Ferguson.....	7,544	31	.....	\$50	2	0	1/1&7/1	12	256	140
.....	Detroit.....	F. J. Murphy.....	18,803	12	.....	\$25	1	0	7/1	12	572	129
.....	Rochester, Minn.....	J. S. Lundy.....	.....	.....	.....	\$75	6	0	Quart.	36	412	329
.....	Jersey City, N. J.....	W. Gleason.....	18,321	90	.....	None	4	0	7/1	12	1,387	290
.....	New York City.....	E. A. Roventine.....	62,112	100	.....	\$50	12	0	Varies	36	3,455	198
.....	New York City.....	D. E. Brace.....	8,300	5	.....	\$50	1	0	7/1	12	276	63
.....	New York City.....	D. E. Brace.....	10,847	100	.....	\$100	3	0	7/1	12	1,017	187
.....	New York City.....	.....	8,981	15	.....	\$101	3	0	1/1&11/1	24	236	60
Grasslands Hospital.....	Valhalla, N. Y.....	R. B. Hammond.....	5,892	86	.....	\$95	1	1	Varies	36	450	322
Huron Road Hospital.....	East Cleveland, O.....	R. J. Whitacre.....	6,977	2	.....	.....	1	0	.....	...	211	72
State University and Crippled Children's Hospitals.....	Oklahoma City.....	J. A. Moffitt.....	6,455	71	.....	\$50	3	0	7/1	12	321	149
Hahnemann Hospital.....	Philadelphia.....	J. M. Godfrey.....	11,343	31	.....	\$75	1	0	9/1	12	553	165
Rhode Island Hospital.....	Providence.....	F. H. Mathews.....	10,890	39	.....	\$50	1	0	Varies	12	951	291
State of Wisconsin General Hospital...	Madison.....	R. M. Waters.....	11,659	85	.....	\$25	3	3	7/1	36	425	291
Columbia Hospital.....	Milwaukee.....	H. Cunningham.....	3,375	14	.....	\$50	1	0	7/1	12	110	57
7. ORTHOPEDIC SURGERY												
Children's Hospital.....	Los Angeles.....	J. C. Wilson.....	359	45	Yes	\$90	1	0	7/1	12	3	2
Los Angeles County Hospital.....	Los Angeles.....	J. C. Wilson.....	4,587	100	Yes	\$10	5	0	4/1&10/1	24	172	123
.....	Los Angeles.....	C. L. Lowman.....	2,175	87	Yes	\$50	4	0	7/1	36	2	1
.....	Los Angeles.....	F. Linde.....	1,100	100	No	a	1	0	7/1	12	...	0
.....	San Francisco.....	S. L. Hans.....	296	100	Yes	\$70	1	0	7/1	12	0	1
.....	San Francisco.....	H. O. Naffziger.....	217	64	Yes	\$25	2	0	7/1	12	1	...
.....	Sao Francisco.....	.....	.....	7	Yes	\$50	1	1	7/1	24	10	2
.....	Dever.....	A. Bassio.....	2,140	34	Yes	\$40	1	0	7/1	12	26	5
.....	New Haven, Conn.....	P. Lewin.....	695	100	Yes	\$25	2	0	1/1&7/1	12	5	4
.....	Chicago.....	H. B. Thomas.....	592	100	Yes	\$50	1	1	7/1	12	0	0
.....	Chicago.....	B. H. Moore.....	205	100	Yes	\$65	1	0	7/1	12	0	3
.....	Chicago.....	E. L. Compere.....	618	33	Yes	None	1	3	1/1&7/1	36	3	...
.....	Indianapolis.....	G. J. Garceau and L. A. Ensminger.....	1,069	82	Yes	\$33	1	1	7/1	12	11	7
.....	Iowa City.....	A. Steindler.....	3,779	86	Yes	\$20	1	7	7/1	36	9	1
University Hospitals.....	New Orleans.....	H. T. Simon and P. A. McIlheney.....	433	100	Yes	\$25	1	0	7/1	24	14	5
Charity Hospital.....	Shreveport, La.....	H. A. Durham.....	194	100	Yes	\$125	1	0	Varies	12	0	0
Shriners Hospital for Crippled Children	Baltimore.....	C. J. Frankel.....	187	95	Yes	\$92	1	0	7/1	12	2	0
James Lawrence Kernan Hospital.....	Baltimore.....	G. E. Bennett.....	444	48	Yes	None	1	1	7/1&9/1	12-36	5	1
Johns Hopkins Hospital.....	Baltimore.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

## 7. ORTHOPEDIC SURGERY—(Continued)

		Chief of Service	Inpatients Treated	Per Cent Fees	Outpatient Service	Beginning Salary	Residents	Assistant Residents	Service Begins	Available Training (Months)	Deaths	Autopsies
Boston City Hospital.....	Boston.....	O. J. Hermann.....	1,383	94	Yes	*	1	1	Varies	12	43	0
.....	Boston.....	P. R. Ober.....	416	1	Yes	None	1	0	8/1	12	1	0
.....	Boston.....	M. N. Smith-Petersen	438	44	Yes	\$42	1	0	1/1	12	3	0
.....	Springfield, Mass.....	R. N. Hatt.....	415	100	Yes	\$25	1	0	7/1	12	3	1
.....	Detroit.....	C. L. Mitchell.....	.....	...	Yes	\$130	1	3	9/1	12	9	1
Henry Ford Hospital.....	St. Paul.....	C. O. Chatterton.....	764	100	Yes	\$100	1	0	7/1	12	8	6
Gillette State Hospital for Crippled Child-- State (Unit St. Ma Shriners Hosp. for Crippled Children..	Columbia, Mo.....	W. J. Stewart.....	612	3	Yes	\$50	1	0	7/1	12	3	0
Jersey City Hospital.....	St. Louis.....	P. Hoffman.....	97	42	Yes	\$25	1	0	7/1	34	7	4
.....	St. Louis.....	C. H. Crego, Jr.....	535	100	Yes	\$135	1	0	7/1	12	1	0
.....	Jersey City, N. J.....	S. Sprague and W. G. Doran.....	1,609	90	Yes	\$100	1	1	1/1&7/1	12	65	2
New Jersey Orthopaedic Hospital and Dispensary.....	Orange.....	H. W. Smith.....	372	27	Yes	\$50	2	0	Varies	18	2	1
Kings County Hospital.....	Brooklyn.....	J. L'Episcopo.....	1,276	100	Yes	\$15	1	1	1/1&7/1	36	23	7
Long Island College Hospital.....	Brooklyn.....	J. C. Rusbmore.....	453	7	Yes	\$22	1	1	7/1	12	6	1
Bellevue Hospital.....	New York City.....	A. Krida.....	115	100	Yes	.....	1	1	1/1&7/1	18	...	...
Hospital for Joint Diseases.....	New York City.....	.....	4,169	52	Yes	9	0	1	1/1	36	21	5
Metropolitan Hospital.....	New York City.....	A. H. Bingham.....	639	100	Yes	\$75	1	0	7/1	12	...	...
New York Orthopaedic Dispensary and Hospital.....	New York City.....	B. P. Farrell.....	1,175	2	Yes	\$50	8	0	Quart.	24	2	2
New York Post-Graduate Medical School and Hospital.....	New York City.....	C. Ogilvy.....	220	13	Yes	\$90	1	0	7/1	12	...	...
New York Society for the Relief of the Ruptured and Crippled.....	New York City.....	P. D. Wilson.....	1,543	10	Yes	\$20	8	0	1/1&7/1	24	5	1
Strong Memorial and Rochester Mu- nicipal Hospitals.....	Rochester, N. Y.....	R. P. Schwartz.....	564	63	Yes	\$42	1	0	7/1	12	...	...
Sea View Hospital.....	Staten Island, N. Y.....	D. Bosworth.....	197	100	No	\$100	2	0	1/1&7/1	12	35	10
New York State Reconstruction Home..	West Haverstraw.....	C. Wallace.....	405	95	Yes	\$100	1	2	1/1&7/1	18	4	0
Duke Hospital.....	Durham, N. C.....	D. Hart.....	629	56	Yes	\$42	1	0	7/1	48	2	0
Cincinnati General Hospital.....	Cincinnati.....	A. H. Freiberg.....	424	87	Yes	*	1	1	7/1	24	15	7
Mount Sinai Hospital.....	Cleveland.....	R. S. Reich.....	2,037	20	Yes	\$60	1	0	7/1	12	2	2
University Hospitals.....	Cleveland.....	M. Harbin.....	460	35	Yes	\$25	1	0	7/1	12	...	...
State University and Crippled Children's Hospitals.....	Oklahoma City.....	P. C. Colonna.....	1,310	71	Yes	\$50	3	0	7/1	36	13	4
Sisler Hospital.....	Tulsa, Okla.....	W. Sisler.....	635	...	Yes	\$50	1	0	7/1	12	...	...
Shriners Hospital for Crippled Children	Portland.....	B. M. Pease.....	235	100	Yes	\$25	1	0	7/1	12	...	...
State Hospital for Crippled Children..	Elizabethtown, Pa.....	J. S. Donaldson.....	353	100	Yes	\$100	2	0	7/1	24	4	2
Philadelphia Orthopaedic Hospital and Infirmary for Nervous Diseases.....	Philadelphia.....	A. B. Gill and D. P. Willard.....	263	31	Yes	\$40	1	0	7/1	12	1	0
Temple University Hospital.....	Philadelphia.....	J. R. Moore.....	523	38	Yes	\$40	2	0	7/1	36	0	3
Robert Packer Hospital.....	Sayre, Pa.....	T. Outland.....	278	50	No	\$75*	1	0	9/1	12	3	0
Willis C. Campbell Clinic.....	Memphis, Tenn.....	W. C. Campbell.....	974	11	Yes	\$50	5	0	1/1&7/1	30	6	1
Parkland Hospital.....	Dallas.....	R. Jackson.....	399	91	Yes	\$10	1	0	7/1	12	...	...
Texas Scottish Rite Hospital for Crip- pled Children.....	Dallas.....	W. B. Carrell.....	847	100	Yes	\$100	1	0	7/1	12	1	0
University of Virginia Hospital.....	University.....	R. V. Funsten.....	618	30	Yes	\$53	1	1	7/1	12	10	4
Children's State of Milwaukee	Seattle.....	H. J. Wyckoff.....	331	52	Yes	\$100	1	0	7/1	12	3	3
.....	Madison.....	R. Burns.....	.....	85	Yes	\$25	3	2	7/1	30	...	...
.....	Wauwatosa, Wis.....	C. O. Schneider.....	536	97	Yes	\$100	1	0	7/16	12	...	...

## 8. UROLOGY

Hillman Hospital.....	Birmingham, Ala.....	W. F. Scott.....	450	100	Yes	\$40	1	0	7/1	12	36	9
Los Angeles County Hospital.....	Los Angeles.....	J. F. Orane.....	2,601	100	Yes	\$10	6	0	4/1&10/1	36	182	71
San Francisco Hospital.....	San Francisco.....	.....	654	100	No	*	1	0	7/1	12	...	...
Stanford University Hospital.....	San Francisco.....	J. R. Dillon.....	471	3	Yes	\$25	1	0	7/1	12	10	3
University of California Hospital.....	San Francisco.....	H. C. Naffziger.....	493	64	Yes	\$25	1	0	7/1	12	23	15
New Haven Hospital.....	New Haven, Conn.....	O. L. Deming.....	1994	34	Yes	\$40	1	0	7/1	12	10	7
Gallinger Municipal Hospital.....	Washington, D. C.....	W. P. Herbst.....	423	99	No	\$30	1	0	7/1	12	55	14
Grady Hospital.....	Atlanta, Ga.....	M. K. Bailey.....	543	100	Yes	\$30	1	0	6/20	12	48	14
.....	Chicago.....	C. B. Huggins.....	.....	17	Yes	\$25	1	0	7/1	12	9	6
.....	Indianapolis.....	W. E. Tinney.....	402	88	Yes	\$42	1	0	7/1	12	53	24
.....	Iowa City.....	N. G. Alcock.....	1,400	86	Yes	\$20	1	0	7/1	36	133	75
.....	New Orleans.....	P. J. Kahle and J. G. Pratt.....	1,128	100	Yes	\$25	1	2	7/1	24	93	51
Touro Infirmary.....	New Orleans.....	W. A. Reed.....	.....	35	Yes	\$25	1	0	7/1	12	...	...
Johns Hopkins Hospital.....	Baltimore.....	H. H. Young.....	784	43	Yes	None	1	2	7/1&10/1	12-48	32	22
Beth Israel Hospital.....	Boston.....	E. G. Crabtree.....	343	39	Yes	None	1	0	6/1	24	...	...
Boston City Hospital.....	Boston.....	H. H. Howard.....	514	94	Yes	*	1	1	Varies	12	58	15
Massachusetts General Hospital.....	Boston.....	G. G. Smith.....	364	44	Yes	\$42	1	1	1/1	24	18	11
University Hospital.....	Ann Arbor, Mich.....	R. M. Nesbit.....	1,357	81	Yes	\$25	1	0	7/1	60	73	40
Battle Creek Sanitarium.....	Battle Creek, Mich.....	W. P. Martin.....	831	...	No	\$125	1	0	7/1	12	6	1
City of Detroit Receiving Hospital.....	Detroit.....	H. W. Plaggemeyer and W. E. Keane.....	833	100	Yes	\$33	1	1	7/15	24	51	20
Harper Hospital.....	Detroit.....	F. H. Cole.....	.....	12	Yes	\$25	1	0	7/1	12	...	...
Henry Ford Hospital.....	Detroit.....	J. K. Ormond.....	.....	...	Yes	\$130	1	1	0/1	12	13	4
Eloise Hospital (Dr. William J. Sey- mour Hospital).....	Eloise, Mich.....	J. R. Heldenreich.....	561	93	Yes	\$92	1	1	7/1	12	23	7
Ancker Hospital.....	St. Paul.....	F. E. B. Foley.....	835	93	Yes	\$50	1	0	6/1	12	31	19
St. Mary's St. Louis City Hospital	St. Louis.....	.....	677	100	Yes	\$100	1	0	7/1	12	89	40
St. Mary's St. Louis	St. Louis.....	C. E. Burford.....	420	42	Yes	\$25	1	0	7/1	34	21	8
Bayonne Jersey City Hospital	Bayonne, N. J.....	S. Woodruff.....	301	70	Yes	*	1	0	1/1&7/1	12	...	...
Newark City Hospital.....	Jersey City, N. J.....	F. Daly.....	929	90	Yes	\$100	1	1	1/1&7/1	12	50	5
Kings County Hospital.....	Newark, N. J.....	R. Harner.....	645	100	No	\$20	1	0	7/1	12	...	...
Long Island College Hospital.....	Brooklyn.....	C. S. Cochran.....	1,525	100	Yes	\$100	1	1	1/1&7/1	12	235	23
Buffalo City Hospital.....	Brooklyn.....	F. L. Senger.....	464	7	Yes	\$22	1	1	7/1	12	17	1
Buffalo General Hospital.....	Buffalo.....	F. J. Parmenter.....	352	65	Yes	\$68	1	1	7/1	36	36	11
Queens General Hospital.....	Buffalo.....	F. J. Parmenter.....	600	3	Yes	\$25	1	0	7/1	12	31	16
Bellevue Hospital.....	Jamaica, N. Y.....	F. G. Riley.....	665	100	Yes	\$15	1	1	7/1	12	52	26
Morrisania City Hospital.....	New York City.....	A. R. Stevens.....	1,454	100	Yes	...	1	2	1/1&7/1	24	...	...
New York Hospital.....	New York City.....	T. Townsend.....	710	100	Yes	\$15	2	2	1/1&7/1	24	32	6
New York Post-Graduate Medical School and Hospital.....	New York City.....	O. Lowley.....	376	23	Yes	None	1	1	7/1	22	23	16
Presbyterian Hospital.....	New York City.....	J. A. Hyams.....	332	13	Yes	\$20	1	0	1/1	12	10	4
Strong Memorial and Rochester Mu- nicipal Hospitals.....	New York City.....	J. B. Squire.....	1,306	50	Yes	\$42	1	5	1/1&7/1	36	...	...
Sea View Hospital.....	Rochester, N. Y.....	W. W. Scott.....	273	63	Yes	\$42	1	0	7/1	12	...	...
Duke Hospital.....	Staten Island, N. Y.....	A. J. Greenberger.....	150	100	No	\$100	1	0	1/1&7/1	12	4	2
City Hospital.....	Durham, N. C.....	E. P. Alyea.....	595	56	Yes	\$42	1	0	7/1	43	17	11
University Starling	Cleveland.....	C. H. Lenhart.....	333	97	Yes	\$12	1	0	7/1	12	...	...
.....	Cleveland.....	J. Jackson.....	546	35	Yes	\$25	1	0	7/1	12	...	...
.....	Columbus, O.....	W. N. Taylor.....	255	55	Yes	\$25	1	1	7/1	24	29	13

Numerical and other references will be found on page 847.

## 8. UROLOGY—(Continued)

		Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Service	Beginning Salary	Residents	Assistant Residents	Service Begins	Available Training (Months)	Deaths	Autopsies
Graduate Hosp. of the Univ. of Pa.	Philadelphia.....	J. C. Birdsall and W. Mackinney.....	152	33	Yes	None	1	0	7/1	12	10	3
Hosp. of the University of Pennsylvania	Philadelphia.....	A. Randall.....	402	28	Yes	None	1	0	7/1	12	15	19
Pennsylvania Hospital.....	Philadelphia.....	L. Herrnan.....	323	28	Yes	\$20	1	1	7/1	12	13	2
Presbyterian Hospital.....	Philadelphia.....	J. C. Birdsall.....	244	16	Yes	None	1	0	7/1	12	22	12
Mercy Hospital.....	Pittsburgh.....	E. J. McCague.....	410	35	Yes	None	1	0	7/1	36	31	15
University of Virginia Hospital.....	University.....	J. H. Neff.....	602	30	Yes	None	1	1	7/1	24	31	15
State of Wisconsin General Hospital.....	Madison.....	I. R. Sisk.....	.....	85	Yes	\$25	1	2	7/1	36	.....	.....
Milwaukee County Hospital.....	Wauwatosa, Wis.....	R. E. Stockinger.....	330	97	Yes	\$100	1	0	7/16	12	29	16

## 9. OPHTHALMOLOGY

Los Angeles County Hospital.....	Los Angeles.....	G. H. Kress.....	736	100	Yes	\$10	2	0	4/1	24	.....	.....
Stanford University Hospitals.....	San Francisco.....	H. Barkan.....	480	8	Yes	\$25	1	1	7/1	12	1	0
University of California Hospitals.....	San Francisco.....	C. Naffziger.....	204	64	Yes	\$25	2	0	7/1	12	1	0
Colorado General Hospital.....	Denver.....	W. M. Dane.....	90	61	Yes	\$50	1	0	7/1	24	.....	.....
Episcopal Eye, Ear and Throat Hosp.	Washington, D. C.....	W. F. Monereiff.....	.....	25	Yes	None	4	0	3/1, 7/1, 11/1	16	2	0
Cook County Hospital.....	Chicago.....	W. F. Monereiff.....	711	100	Yes	\$50	3	0	1/1 & 7/1	12	0	0
Illinois Eye and Ear Infirmary.....	Chicago.....	.....	.....	100	Yes	None	6	0	1/1 & 7/1	12	.....	.....
Michael Reese Hospital.....	Chicago.....	.....	550	41	Yes	None	1	0	7/1	12	.....	.....
Passavant Memorial Hospital.....	Chicago.....	S. Gifford.....	272	7	Yes	None	1	0	7/1	12	0	0
Presbyterian Hospital.....	Chicago.....	W. F. Monereiff.....	201	22	Yes	None	2	0	1/1 & 7/1	12	0	0
Research and Educational Hospital.....	Chicago.....	H. Beard.....	244	100	Yes	\$50	1	0	7/1	12	0	0
University of Chicago Clinics.....	Chicago.....	E. V. L. Brown.....	199	35	Yes	\$25	1	3	1/1 & 7/1	36	1	1
Indianapolis City Hospital.....	Indianapolis.....	B. J. Larkin.....	150	88	Yes	\$42	1	0	7/1	12	0	0
Indiana University Hospitals.....	Indianapolis.....	W. F. Hughes.....	241	82	Yes	\$33	1	0	7/1	12	1	0
University Hospitals.....	Iowa City.....	C. S. O'Brien.....	1,226	86	Yes	\$20	1	3	7/1	45	0	0
Eye, Ear, Nose and Throat Hospital.....	New Orleans.....	W. R. Duffington.....	.....	15	Yes	None	3	0	7/1	20	0	0
Johns Hopkins Hospital.....	Baltimore.....	A. Woods.....	1,244	43	Yes	None	1	5	7/1 & 9/1	12-48	2	0
Massachusetts Eye and Ear Infirmary.....	Boston.....	J. H. Walte.....	2,349	22	Yes	None	7	0	Quart.	21	11	2
.....	Ann Arbor, Mich.....	B. Frailek.....	953	81	Yes	\$25	2	2	7/1	36	.....	.....
.....	St. Louis.....	L. T. Post.....	542	17	Yes	\$27	1	0	7/1	12	5	5
.....	St. Louis.....	.....	203	100	Yes	\$100	2	0	7/1	34	0	0
.....	St. Louis.....	W. H. Luedde.....	162	42	Yes	\$25	2	0	7/1	34	0	0
.....	Brooklyn.....	.....	.....	20	Yes	None	0	0	Quart.	18	2	1
Brooklyn Eye and Ear Hospital.....	Brooklyn.....	W. Moehle.....	337	100	Yes	\$15	1	1	1/1 & 7/1	12	3	1
Kings County.....	Brooklyn.....	.....	201	7	Yes	\$22	1	1	7/1	12	.....	.....
Long Island.....	Brooklyn.....	H. N. Evans.....	.....	65	Yes	\$63	1	1	7/1	36	0	0
Buffalo City.....	Buffalo.....	J. H. Weed.....	110	65	Yes	.....	1	4	1/1, 5/1, 9/1	36	.....	.....
Bellevue Hospital.....	New York City.....	W. W. Weeks.....	651	100	Yes	.....	1	1	Varies	18	0	0
Herman Knapp Memorial Eye Hospital	New York City.....	Arnold Knapp.....	819	15	Yes	None	6	0	1/1, 5/1, 9/1	24	5	0
.....	New York City.....	.....	1,672	13	Yes	None	6	0	1/1, 5/1, 9/1	24	5	0
.....	New York City.....	A. L. Chambers.....	90	100	Yes	None	1	0	7/1	12	1	0
.....	New York City.....	K. Schlivek.....	.....	53	Yes	\$50	1	0	Quart.	24	1	0
.....	New York City.....	.....	2,911	6	Yes	None	7	0	1/1 & 7/1	36	.....	.....
.....	New York City.....	J. M. Wheeler.....	1,934	30	Yes	\$53	6	0	1/1 & 7/1	36	.....	.....
Strong Memorial and Rochester Muclai- pal.....	Rochester, N. Y.....	J. P. Gipner.....	340	63	Yes	\$42	1	1	7/1	12	.....	.....
.....	Valhalla, N. Y.....	E. C. Wood.....	85	86	Yes	\$75	1	0	7/1	24	0	1
.....	Cincinnati.....	D. T. Vall.....	403	87	Yes	.....	1	1	7/1	24	3	1
.....	Cleveland.....	P. W. Moore.....	167	97	Yes	\$42	1	0	7/1	12	.....	.....
.....	Cleveland.....	A. B. Bruner.....	423	35	Yes	\$25	1	1	1/1	24	.....	.....
.....	Portland.....	F. A. Kiehle.....	119	100	Yes	\$40	1	0	7/1	12	1	1
Graduate Hospital of the University of Pennsylvania.....	Philadelphia.....	L. C. Peter and W. Shoemaker.....	231	33	Yes	None	1	0	7/1	12	1	0
Temple University Hospital.....	Philadelphia.....	W. I. Lillie.....	151	33	Yes	\$40	3	0	7/1	36	.....	.....
Wills Hospital.....	Philadelphia.....	.....	3,805	63	Yes	None	7	0	Quart.	21	11	6

a. OPHTHALMOLOGY-OTOLARYNGOLOGY (See page 845)

## 10. OTOLARYNGOLOGY

Children's Hospital.....	Los Angeles.....	J. M. Brown.....	1,302	45	Yes	\$90	1	0	7/1	12	3	3
Los Angeles County Hospital.....	Los Angeles.....	J. M. Brown and F. Detling.....	2,420	100	Yes	\$10	3	0	4/1	24	34	12
San Francisco Hospital.....	San Francisco.....	R. C. Martin and H. B. Graham.....	430	100	Yes	.....	1	1	7/1	12	.....	.....
Stanford University Hospitals.....	San Francisco.....	E. Sewall.....	1,364	3	Yes	\$25	1	1	7/1	12	2	0
University of California Hospital.....	San Francisco.....	H. C. Naffziger.....	757	64	Yes	\$25	1	0	7/1	12	2	3
New Haven Hospital.....	New Haven, Conn.....	N. Canfield.....	1,050	34	Yes	\$40	1	1	7/1	12	13	2
Episcopal Eye, Ear and Throat Hosp.	Washington, D. C.....	.....	.....	23	Yes	None	3	0	3/1, 7/1, 11/1	12	98	29
Cook County Hospital.....	Chicago.....	S. J. Pearlman.....	7,395	100	Yes	\$25	3	0	1/1 & 7/1	12	.....	.....
Illinois Eye and Ear Infirmary.....	Chicago.....	.....	.....	100	Yes	None	1	0	1/1 & 7/1	12	.....	.....
Passavant.....	Chicago.....	J. F. Delph.....	364	7	Yes	None	1	0	7/1	12	0	0
Presbyter.....	Chicago.....	D. Hayden.....	1,746	22	Yes	\$50	2	0	1/1 & 7/1	12	6	3
Research.....	Chicago.....	P. L. Lederer.....	936	100	Yes	\$50	1	0	7/1	24	2	2
University.....	Chicago.....	F. R. Lindsay.....	796	38	Yes	None	1	2	1/1 & 7/1	24	3	1
Indianapolis.....	Indianapolis.....	R. Chappell.....	1,312	88	Yes	\$42	1	0	7/1	12	4	15
Indiana.....	Indianapolis.....	O. H. McCaskey.....	1,065	82	Yes	\$33	1	0	7/1	60	19	15
University.....	Iowa City.....	D. M. Lierle.....	2,301	86	Yes	\$20	2	5	7/1	12	.....	.....
Eye, Ear, N.....	New Orleans.....	J. R. Hume and F. E. Lejeune.....	.....	15	Yes	None	6	0	7/1	24	16	3
Johns Hopkins Hospital.....	Baltimore.....	S. J. Crowe.....	933	43	Yes	None	1	1	7/1 & 9/1	12-36	8	4
Beth Israel Hospital.....	Boston.....	L. M. Freedman and L. Arkin.....	1,123	39	Yes	None	1	0	7/1	12	34	16
.....	Boston.....	H. P. Mosher.....	3,424	22	Yes	None	7	0	Quart.	12	7	4
.....	Worcester, Mass.....	G. Berry.....	1,439	14	Yes	\$42	1	0	7/1	48	27	19
.....	Ann Arbor, Mich.....	A. C. Furstenberg.....	1,636	81	Yes	None	1	8	7/1	36	.....	.....
.....	St. Louis.....	L. W. Dean, Sr.....	1,274	17	Yes	None	1	0	7/1	12	3	16
.....	St. Louis.....	S. B. Westlake.....	314	25	Yes	\$63	1	0	7/1	12	34	1
.....	St. Louis.....	.....	1,332	100	Yes	\$100	1	0	7/1	34	1	.....
.....	St. Louis.....	.....	923	42	Yes	\$25	1	0	7/1	12	.....	.....
.....	St. Louis.....	W. E. Sauer.....	2,519	100	No	\$20	1	0	7/1	15	20	7
.....	Newark, N. J.....	I. Berney.....	.....	20	Yes	None	8	0	Varies	12	11	.....
.....	Brooklyn.....	.....	792	24	Yes	\$50	1	0	7/1	36	56	10
Jewish Hospital.....	Brooklyn.....	E. L. Berker.....	3,130	100	Yes	\$15	1	2	7/1	12	.....	.....
Kings County Hospital.....	Brooklyn.....	M. O. Myerson.....	953	7	Yes	\$22	1	0	7/1	12	4	2
Long Island College Hospital.....	Brooklyn.....	R. L. Moorhead.....	809	65	Yes	\$68	2	2	7/1	36	3	.....
Buffalo City Hospital.....	Buffalo.....	J. E. Fairbairn.....	1,016	3	Yes	\$25	1	1	7/1	12	.....	.....
Buffalo General Hospital.....	Buffalo.....	J. E. Fairbairn.....	3,148	100	Yes	.....	1	5	3/1, 7/1, 11/1	24	0	0
Bellevue Hospital.....	New York City.....	J. W. Fowlkes.....	1,295	5	Yes	\$50	2	0	7/1	24	21	1
Flower-Fifth Avenue Hospital.....	New York City.....	J. A. W. Hetrick.....	15,460	13	Yes	None	8	0	Quart.	24	.....	.....
Manhattan Eye, Ear and Throat Hosp.	New York City.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Numerical and other references will be found on page 847.

## 10. OTOLARYNGOLOGY—(Continued)

		Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Service	Beginning Salary	Residents	Assistant Residents	Service Begins	Available Training (Months)	Deaths	Autopsies
Metropolitan Hospital.....	New York City.....	J. A. W. Hetrick.....	969	100	Yes	\$100	1	0	7/1	12	...	...
Mount Sinai Hospital.....	New York City.....	R. Kramer and J. L. Maybaum .....	3,209	55	Yes	\$50	1	1	1/1&7/1 Quart.	24	11	6
New York Eye and Ear Infirmary.....	New York City.....	.....	.....	6	Yes	None	8	0	7/1	24	11	0
Strong Memorial and Rochester Mu- nicipal Hospitals .....	Rochester, N. Y.....	C. A. Heatly and C. T. Harris.....	1,805	63	Yes	\$42	1	1	7/1	12	...	...
Sea View Hospital.....	Staten Island, N. Y.....	H. Ruhms.....	1,844	100	No	\$100	2	0	1/1&7/1	12	0	0
Grasslands Hospital.....	Valhalla, N. Y.....	M. T. Smith.....	633	86	Yes	\$75	1	0	7/1	24	5	3
Cincinnati General Hospital.....	Cincinnati.....	S. Iglaue.....	1,450	87	Yes	5	1	1	7/1	24	16	5
City Hospital.....	Cleveland.....	C. W. Engler.....	805	97	Yes	\$42	1	0	4/1	18	...	...
St. Luke's Hospital.....	Cleveland.....	C. E. Pitkin.....	1,719	18	Yes	\$25	1	1	7/1	24	4	2
University Hospitals .....	Cleveland.....	W. B. Chamberlin.....	2,119	35	Yes	\$25	1	2	7/1	24	...	...
University of Oregon Medical School Hospitals .....	Portland.....	R. A. Fenton.....	405	100	Yes	\$40	1	0	7/1	12	4	2
George F. Geisinger Memorial Hospital.	Danville, Pa.....	F. W. Davison.....	931	27	Yes	\$50	1	0	9/1	12	3	1
Graduate Hospital of the University of Pennsylvania .....	Philadelphia.....	.....	2,661	53	Yes	None	2	0	7/1	12	16	2
Temple University Hospital.....	Philadelphia.....	R. F. Riddpath and M. S. Ersser.....	1,539	38	Yes	\$40	1	0	7/1	36	3	1
Gill Memorial Eye, Ear and Throat Hospital .....	Roanoke, Va.....	E. G. Gill.....	.....	10	Yes	\$50	1	1	7/1	24	0	0

## a. OPHTHALMOLOGY-OTOLARYNGOLOGY

White Memorial Hospital.....	Los Angeles.....	W. A. Boyce and B. N. Colver.....	531	2	Yes	\$90	3	0	7/1	12	3	1
San Diego County General Hospital....	San Diego, Calif.....	G. L. Kilgore and W. H. Halsey.....	808	100	Yes	\$75	1	0	7/1	12	...	...
Hospital for Children.....	San Francisco.....	R. C. Martin.....	1,193	4	Yes	\$25	1	0	7/1	12	2	1
Gallinger Municipal Hospital.....	Washington, D. C.....	W. T. Davis and D. Davis.....	575	99	No	\$30	1	1	7/1	12	1	0
Grady Hospital.....	Atlanta, Ga.....	.....	2,101	100	Yes	\$50	2	3	6/20	12	5	1
Charity Hospital .....	New Orleans.....	.....	2,267	100	Yes	\$25	1	3	7/1	24	...	...
Touro Infirmary .....	New Orleans.....	H. Blum & A. I. Weil	1,522	35	Yes	\$25	1	0	7/1	12	7	0
Baltimore Eye, Ear and Throat Charity Hospital .....	Baltimore.....	H. K. Fleck.....	2,530	49	Yes	None	3	0	7/1	12	7	2
University Hospital .....	Baltimore.....	C. A. Clapp and E. A. Looper.....	1,074	47	Yes	None	1	0	7/1	24	8	2
Boston City Hospital <sup>2</sup> .....	Boston.....	J. J. Regan and L. M. Freedman.....	5,482	94	Yes	None	2	5	Quart.	21	25	7
City of Detroit Receiving Hospital.....	Detroit.....	P. Heath and J. M. Robb .....	903	100	Yes	\$53	1	1	7/15	12	14	6
Grace Hospital.....	Detroit.....	C. C. McClelland.....	1,935	27	Yes	\$50	1	1	9/1	12	...	...
Harper Hospital.....	Detroit.....	P. Heath and J. M. Robb .....	3,304	12	Yes	\$25	1	3	7/1	36	...	...
Henry Ford Hospital.....	Detroit.....	E. L. Whitney and G. C. Kreutz.....	.....	..	Yes	\$130	1	4	9/1	12	8	6
Eloise Hospital (Dr. William J. Sey- mour Hospital) .....	Eloise, Mich.....	M. Mintz.....	706	98	Yes	\$92	1	1	7/1	12	2	2
Minneapolis General Hospital <sup>1</sup> .....	Minneapolis.....	M. C. Pfunder.....	1,141	85	Yes	\$25	2	0	1/1	36	5	3
University Hospitals <sup>1</sup> .....	Minneapolis.....	H. Newhart.....	602	12	Yes	\$50	4	0	1/1&7/1	24	8	5
Aneker Hospital.....	St. Paul.....	R. O. Leavenworth.....	1,935	95	Yes	\$50	1	1	7/1	36	8	5
Jersey City Hospital.....	Jersey City, N. J.....	F. Brophy and M. Borbone .....	3,318	90	Yes	None	2	2	7/1	12	12	0
Newark Eye and Ear Infirmary.....	Newark, N. J.....	W. F. Engleton.....	2,124	13	Yes	None	3	0	Varies	12	33	15
Queens General Hospital.....	Jamaica, N. Y.....	W. G. Frey and M. S. Bender.....	1,101	100	Yes	\$15	1	2	7/1	12	17	9
Harlem Eye and Ear Hospital.....	New York City.....	C. B. Meding.....	1,897	43	Yes	None	3	0	1/1&7/1	15	...	...
N. Y. Polyclinic Med. School and Hosp. N. Y. Post-Graduate Medical School and Hospital .....	New York City.....	.....	2,375	15	Yes	None	4	0	1/1&7/1	24	8	3
St. Luke's Hospital <sup>2</sup> .....	New York City.....	M. Cohen and D. Mac- pherson .....	2,765	13	Yes	None	1	5	5/1&11/1	36	7	1
Duke Hospital .....	Durham, N. C.....	W. B. Anderson and W. W. Eagle.....	2,635	48	Yes	None	1	2	3/1&9/1	15	...	...
State University and Crippled Children's Hospitals .....	Oklahoma City.....	E. S. Ferguson and T. G. Walls.....	901	56	Yes	\$42	1	1	7/1	36	12	2
Eye and Ear Hospital.....	Pittsburgh.....	W. E. Carson and J. H. McCready.....	619	71	Yes	\$50	1	0	7/1	12	13	3
Memphis Eye, Ear, Nose and Throat Hospital .....	Memphis, Tenn.....	E. O. Ellett.....	1,756	27	Yes	None	4	0	1/1&7/1	24	3	1
Medical College of Virginia, Hosp. Div.	Richmond.....	R. H. Courtney and K. S. Blackwell.....	1,306	5	Yes	\$50	1	1	7/1	12	10	4
University of Virginia Hospital.....	University.....	H. S. Hedges and F. D. Woodward.....	1,110	30	Yes	\$25	1	1	7/1	24	5	1
State of Wisconsin General Hospital...	Madison.....	F. A. Davis and W. N. Neshit.....	.....	85	Yes	\$25	1	2	7/1	36	...	...
Milwaukee County Hospital.....	Wauwatosa, Wis.....	S. G. Higgins.....	250	97	Yes	\$100	1	0	7/16	12	...	...

## 11. PATHOLOGY

Hillman Hospital.....	Birmingham, Ala.....	G. S. Graham.....	10,537	100	.....	\$40	1	0	7/1	12	011	233
Children's Hospital.....	Los Angeles.....	C. M. Hyland.....	4,339	45	.....	\$90	1	0	7/1	12	160	146
Los Angeles County Hospital.....	Los Angeles.....	N. G. Evans.....	53,717	100	.....	\$10	2	0	4/1	24	5,122	2,018
St. Vincent's Hospital.....	Los Angeles.....	J. W. Budd.....	6,397	5	.....	\$90 <sup>2</sup>	1	0	7/1	36	293	194
Collis P. and Howard Huntington Memorial Hospital .....	Pasadena, Calif.....	A. G. Foord.....	5,661	5	.....	\$100	1	0	7/1	12	253	155
Mount Zion Hospital.....	San Francisco.....	G. Y. Rusk.....	4,012	16	.....	\$50	1	0	6/15	12	174	94
San Francisco Hospital.....	San Francisco.....	D. A. Wood and G. Y. Rusk.....	13,276	100	.....	5	1	1	7/1	12	1,559	577
University of California Hospital.....	San Francisco.....	C. L. Connor.....	6,356	64	.....	\$25	1	0	7/1	12	229	159
Denver General Hospital.....	Denver.....	E. T. Thorsness.....	17,305	100	.....	\$60	1	0	7/1	12	1,145	473
New Haven Hospital.....	New Haven, Conn.....	M. C. Winternitz.....	8,335	34	.....	\$40	1	1	7/1	12	423	275
Children's Hospital .....	Washington, D. C.....	J. W. Lindsay.....	6,023	..	.....	\$50	1	0	7/1	12	278	121
Gallinger Municipal Hospital.....	Washington, D. C.....	H. H. Leffer.....	17,633	99	.....	\$50	1	0	7/1	12	1,565	529
Garfield Memorial Hospital.....	Washington, D. C.....	J. W. Lindsay.....	6,691	..	.....	\$50	1	0	7/1	12	270	114
Grady Hospital.....	Atlanta, Ga.....	W. B. Matthews.....	20,945	100	.....	\$100	1	0	6/20	12	1,414	426
Children's Memorial Hospital.....	Chicago.....	W. G. Hibbs.....	4,227	50	.....	\$50	1	0	7/1	12	153	99
Cook County Hospital.....	Chicago.....	W. Schiller.....	73,474	100	.....	5	0	1 1/2	7/1	12	8,782	2,533
Michael Reese Hospital.....	Chicago.....	O. Saphir.....	17,820	41	.....	None	1	1	1/1	12	672	234
Mt. Sinai Hospital.....	Chicago.....	I. Davidsohn.....	6,520	23	.....	\$25	1	1	6/15	12	231	87
Presbyterian Hospital .....	Chicago.....	C. W. Apfelbach.....	11,188	22	.....	\$50	2	0	1 1/2	7/1	255	176



## 11. PATHOLOGY—(Continued)

		Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Service	Beginning Salary	Residents	Assistant Residents	Service Begins	Available Training (Months)	Deaths	Autopsies
Provident Hospital (col.)	Chicago	J. H. Lewis	3,481	63	.....	\$50	1	0	9/1	12	210	22
Research and Educational Hospital	Chicago	S. A. Levinson	5,845	100	.....	\$50	1	0	9/1	12	226	24
St. Luke's Hospital	Chicago	E. F. Hirsch	12,068	6	.....	\$25	1	0	7/1	12	70	19
University of Chicago Clinics	Chicago	H. G. Wells	6,838	28	.....	\$25	1	0	1/1&7/1	12	241	17
Evanston Hospital	Evanston, Ill.	E. L. Benjamins	8,601	10	.....	\$32	1	0	10/1	24	171	12
Indianapolis City Hospital	Indianapolis	H. C. Thornton	10,647	82	.....	\$42	2	0	7/1	12	1,001	45
Indiana University Hospitals	Indianapolis	F. Forry	9,421	82	.....	\$25	1	0	7/1	12	320	24
Methodist Episcopal Hospital	Indianapolis	H. M. Banks	22,200	11	.....	\$33	1	1	7/1	12	616	12
Ball Memorial Hospital	Muncie, Ind.	L. G. Montgomery	4,618	.....	.....	\$100	1	0	7/1	12	232	15
University Hospitals	Iowa City	H. F. Smith	20,198	86	.....	\$30	1	0	7/1	48	536	53
University of Kansas Hospitals	Kansas City, Kan.	H. R. Wahl	5,726	66	.....	\$50	1	4	7/1	24	984	25
Louisville City Hospital	Louisville, Ky.	A. J. Miller	11,190	90	.....	\$14	1	0	7/1	36	2,834	124
Charity Hospital	New Orleans	R. D'Aubrey	21,210	100	.....	\$25	4	0	7/1	12	424	151
Touro Infirmary	Baltimore	J. A. Landford	10,855	35	.....	\$25	1	0	7/1	12	24	120
Baltimore City Hospitals	Baltimore	F. B. Kinkel	7,637	99	.....	\$17	1	1	7/1	12	1,420	124
Johns Hopkins Hospital	Baltimore	W. G. MacCallum	16,320	43	.....	None	1	1	7/1&9/1	12-36	631	40
Boston City Hospital	Boston	F. Parker, Jr.	41,492	04	.....	None	5	0	Varies	36	1,311	79
Children's Hospital	Boston	S. B. Wolbach	5,435	1	.....	None	1	0	7/1	12	426	21
Massachusetts General Hospital	Boston	T. B. Mallory	15,630	44	.....	\$12	1	0	7/1	24	256	10
Massachusetts Memorial Hospitals	Boston	C. F. Branch	7,514	31	.....	\$50	1	2	7/1	12	.....	202
New England Deaconess Hospital	Boston	S. Warren	.....	.....	.....	\$25	1	0	Varies	24	356	22
Peter Bent Brigham Hospital	Boston	S. B. Wolbach	4,714	46	.....	\$53	1	0	7/1	12	254	17
Worcester State Hospital	Worcester, Mass.	W. Freeman	799	60	.....	None	1	0	7/1	12	763	48
University Hospital	Ann Arbor, Mich.	C. Weller	21,582	81	.....	\$25	1	0	7/15	24	2,003	67
City of Detroit Receiving Hospital	Detroit	O. A. Brines	21,620	100	.....	\$50	1	1	9/1	36	453	215
Henry Ford Hospital	Detroit	F. W. Hartmann	10,045	.....	.....	\$110	1	1	9/1	36	453	215
Eloise Hospital (Dr. Wm. J. Seymour Hospital)	Eloise, Mich.	A. H. Chernoff	11,920	93	.....	\$53	1	1	9/1	12	1,137	412
Hurley Hospital	Flint, Mich.	G. R. Backus	10,500	60	.....	\$40	1	0	7/1	12	855	569
Aneker Hospital	St. Paul	J. P. Noble	9,761	95	.....	\$50	1	0	7/1	12	322	164
St. Joseph Hospital	Kansas City, Mo.	R. W. Kerr	6,106	15	.....	\$25	1	0	7/1	12	367	257
Barnes Hospital	St. Louis	L. Loch	9,455	17	.....	None	1	0	7/1	12	1,768	115
St. Louis City Hospital	St. Louis	S. H. Gray	18,481	100	.....	\$125	1	0	7/1	24	135	115
University of Nebraska Hospital	Omaha	J. P. Tolman	3,555	100	.....	\$100	1	0	1/1&7/1	12	110	33
Mary Hitchcock Memorial Hospital	Hanover, N. H.	R. E. Miller	2,224	17	.....	\$100	1	0	10/1	12	297	127
Mountainside Hospital	Montclair, N. J.	M. J. Fein	6,166	.....	.....	\$25	1	1	10/1	24	473	130
Newark Beth Israel Hospital	Newark, N. J.	W. Antopol	11,705	6	.....	\$25	5	0	7/1	12	499	51
Albany Hospital	Albany, N. Y.	A. W. Wright	11,851	2	.....	\$150	1	0	7/1	12	.....	91
Sender Hygienic Laboratory	Albany, N. Y.	J. J. Clemmer	.....	.....	.....	\$50	1	0	7/1	12	404	163
Binghamton City Hospital	Binghamton, N. Y.	V. W. Bergstrom	8,395	55	.....	\$50	1	1	1/1	12	559	119
Jewish Kings	Brooklyn	M. Lederer	15,181	21	.....	\$50	2	2	7/1	24	5,568	1,119
Long 1	Brooklyn	W. W. Hahn	57,534	100	.....	\$22	1	0	7/1	12	297	153
St. John	Brooklyn	J. R. Olliver	5,145	7	.....	\$25	1	0	7/1	12	231	127
Buffalo City Hospital	Brooklyn	K. Strong	4,725	51	.....	\$68	1	2	7/1	36	1,102	370
Buffalo General Hospital	Buffalo	W. F. Jacobs	10,532	65	.....	\$25	1	0	7/1	12	606	119
Millard Fillmore Hospital	Buffalo	K. L. Terplan	10,760	17	.....	\$25	1	0	7/1	12	236	229
Meadowbrook Hospital	Buffalo	N. W. Elton	6,408	17	.....	\$100	1	0	7/1	12	400	123
Mary Immaculate Hospital	Hempstead, N. Y.	F. J. Curpley	7,078	69	.....	None	1	0	7/1	12	355	99
Queens General Hospital	Jamaica, N. Y.	E. F. Koch	7,078	6	.....	\$15	1	1	7/1	12	868	446
Fordham Hospital	New York City	A. A. Ankrst	13,426	100	.....	\$15	1	0	7/1	12	1,151	573
Harlem Hospital	New York City	L. R. Ferraro	15,157	100	.....	\$15	1	1	7/1	12	1,664	131
Lenox Hill Hospital	New York City	S. Weintraub	15,590	100	.....	\$15	1	1	1/1&7/1	12	818	131
Lincoln Hospital	New York City	G. L. Rohdenburg	2,347	24	.....	None	1	0	Varies	.....	818	131
Metropolitan Hospital	New York City	O. R. Brown	10,532	7	.....	\$15	2	0	7/1	12	1,017	157
Montefiore Hosp. for Chronic Diseases	New York City	A. Saecone	10,617	100	.....	\$70	1	0	7/1	12	456	350
Morrisania City Hospital	New York City	D. Marline	1,770	85	.....	\$50	1	1	7/1	12	1,001	318
New York City Hospital	New York City	J. R. Aronson	13,711	100	.....	\$15	1	0	7/1	12	782	318
New York Hospital	New York City	J. R. Lisa	7,830	100	.....	\$100	1	0	7/1	36	587	323
N. Y. Post-Graduate Medical School and Hospital	New York City	E. L. Opie	18,367	23	.....	None	1	0	7/1	12	313	121
Presbyterian Hospital	New York City	W. J. MacNeal	9,554	13	.....	None	1	1	7/1	12	.....	161
St. Luke's Hospital	New York City	J. W. Jobling	19,326	30	.....	\$100	1	1	7/1	24	375	72
Willard Parker Hospital	New York City	F. C. Wood	8,062	48	.....	\$100	1	0	1/1	12	118	72
Strong Memorial and Rochester Municipal Hospitals	Rochester, N. Y.	V. B. Dolgopel	5,639	100	.....	\$100	1	0	7/1	12	211	137
Grasslands Hospital	Valhalla, N. Y.	G. H. Whipple	13,550	63	.....	\$45	2	0	7/1	12	450	329
Duke Hospital	Durham, N. C.	G. Daldorfi	5,892	86	.....	\$72	1	1	1/1&7/1	48	393	222
Cincinnati General Hospital	Cincinnati	W. D. Forbus	10,554	56	.....	\$42	1	0	7/1	24	1,521	794
City Hospital	Cleveland	R. S. Austin	15,834	87	.....	5	0	1	7/1	24	1,598	610
Mount Sinai Hospital	Cleveland	H. T. Karsner	14,432	97	.....	\$42	1	1	7/1	12	250	132
St. Luke's Hospital	Cleveland	S. R. Kline	8,270	100	.....	\$50	1	0	7/1	24	450	132
St. Vincent Charity Hospital	Cleveland	R. Dominguez	11,302	18	.....	\$25	1	1	7/1	12	474	405
University of Michigan	Cleveland	D. J. Rehbock	5,879	35	.....	.....	1	0	7/1	12	715	267
Miami Valley State University Hospitals	Dayton, O.	H. T. Karsner	18,409	35	.....	\$25	1	0	7/1	12	675	267
St. Vincent's Hospital	Portland, Ore.	W. Simpson	10,405	27	.....	\$75	1	0	7/1	12	331	199
University of Oregon Medical School Hospital	Portland, Pa.	H. Jeter	6,455	71	.....	\$50	1	0	7/1	12	394	146
Abington Graduate Hospital	Philadelphia	T. D. Robertson	10,406	10	.....	\$25	1	0	7/1&12/1	12	714	333
Pennsylvania Hosp. of the Philadelphia	Philadelphia	F. R. Menne	6,839	100	.....	\$40	2	0	7/1	12	233	99
Presbyterian Hospital	Philadelphia	J. D. Eiman	6,126	25	.....	\$100	1	0	10/1	12	24	269
Temple University Hospital	Philadelphia	E. A. Case	6,804	33	.....	None	1	0	7/1	24	313	206
Allegheny General Hospital	Philadelphia	E. B. Krumbhaar	11,201	98	.....	None	1	0	7/1	12	412	223
Children's Hospital	Philadelphia	J. T. Bauer	8,849	28	.....	\$20	2	0	7/1	12	3,780	1,047
Elizabeth Steel Magese Hospital	Philadelphia	K. H. Clark	25,845	95	.....	\$100	2	0	7/1	36	270	147
Mersey Hospital	Philadelphia	J. H. Fowler	5,165	16	.....	\$50	1	0	7/1	12	416	159
Montefiore Hospital	Pittsburgh	L. W. Smith	9,681	33	.....	\$40	1	0	7/1	12	478	129
Presbyterian Hospital	Pittsburgh	S. R. Hawthorn	8,233	54	.....	\$55	2	0	9/1	12	210	51
Allegheny General Hospital	Pittsburgh	M. L. Menthen	3,212	50	.....	None	1	0	7/1	12	191	141
Children's Hospital	Pittsburgh	M. Cohen	7,545	39	.....	\$42	1	0	9/1	12	680	15
Elizabeth Steel Magese Hospital	Pittsburgh	H. B. Fernmar	12,412	35	.....	\$90	2	0	7/1	12	264	45
Mersey Hospital	Pittsburgh	K. Yardumian	6,479	37	.....	.....	1	0	9/1	12	180	75
Montefiore Hospital	Pittsburgh	G. R. Lacy	2,708	42	.....	\$42	1	0	9/1	12	536	110
Presbyterian Hospital	Pittsburgh	A. J. Bruckeen	10,419	14	.....	\$50	4	0	7/1	12	525	153
St. Francis Hospital	Pittsburgh	P. Gross	11,841	32	.....	None	1	0	7/1	12	357	249
Western Pennsylvania Hospital	Reading, Pa.	E. D. Funk	6,667	42	.....	\$53	1	0	Varies	12	957	277
Reading Hospital	Reading, Pa.	B. E. Clarke	10,899	30	.....	\$100	1	1	7/1	12	1,328	197
Rhode Island Hospital	Memphis, Tenn.	H. C. Schmeisser	14,877	97	.....	\$32	1	2	7/1	12	372	127
John Vande	Nashville, Tenn.	E. W. Goodpasture	4,886	59	.....	\$35	1	0	7/1	12	312	127
Baylo Med.	Dallas, Tex.	G. T. Caldwell	13,787	20	.....	\$50	1	0	7/1	12	740	291
State	Richmond	F. Apperly	9,979	5	.....	\$25	1	0	7/1	36	428	291
Milwaukee County Hospital	Richmond	W. D. Stovahl	11,689	85	.....	\$25	3	0	7/16	12	1,165	411
Queen's Hospital	Madison	J. Grill	16,832	97	.....	\$100	1	0	7/1	24	522	121
	Wauwatosa, Wis.	N. P. Larsen	8,878	5	.....	\$250	1	0	1/1	24	.....	121
	Honolulu, Hawaii											

Numerical and other references will be found on page 847.

12. RADIOLOGY

		Chief of Service		Inpatients Treated	Per Cent Free	Outpatient Service	Beginning Salary	Residents	Assistant Residents	Service Begins	Available Training (Months)	Deaths	Autopsies
Los Angeles County Hospital.....		Los Angeles.....	R. A. Carter.....	53,717	100	....	\$10	2	0	4/1	36	5,123	2,018
San Francisco Hospital.....		San Francisco.....	L. Bryan and L. H. Garland.....	13,276	100	....	....	1	0	7/1	12	1,539	577
Stanford University Hospitals.....		San Francisco.....	R. R. Newell.....	9,557	3	....	\$25	1	1	7/1	12	233	103
University of California Hospitals.....		San Francisco.....	R. S. Stone.....	6,356	64	....	\$25	1	1	7/1	12	229	159
Colorado General Hospital <sup>20</sup> .....		Denver.....	E. A. Schmidt.....	3,553	61	....	\$100	1	0	7/1	12	270	194
New Haven Hospital.....		New Haven, Conn.....	H. Wilson.....	8,335	34	....	\$40	1	1	7/1	12	423	255
Garfield Memorial Hospital.....		Washington, D. C.....	E. A. Merritt.....	6,691	1	....	\$50	1	0	7/1	12	270	114
Georgetown.....		Washington, D. C.....	F. Coe.....	6,001	6	....	....	1	0	9/1	24	209	67
Cook County.....		Chicago.....	M. J. Hubyen.....	72,491	100	....	\$50	2	0	1/1&7/1	24	8,782	2,333
Michael Reese Hospital.....		Chicago.....	R. A. Arens.....	17,830	41	....	\$25	2	0	7/1	36	672	338
Presbyterian Hospital.....		Chicago.....	P. H. Squire.....	11,183	22	....	\$50	1	0	7/1&9/1	36	286	176
Research and Educational Hospital <sup>2</sup> .....		Chicago.....	A. Hartung.....	5,843	100	....	\$50	1	0	9/1	12	226	216
St. Luke's Hospital <sup>1</sup> .....		Chicago.....	E. L. Jenkinson.....	12,068	6	....	\$50	3	0	Varies	36	700	150
University of Chicago Clinics.....		Chicago.....	P. C. Hodges.....	6,853	38	....	\$25	1	2	1/1&7/1	36	241	170
Methodist Episcopal Hospital.....		Indianapolis.....	H. C. Ochsner.....	22,200	11	....	\$75	1	0	7/1	24	616	142
University Hospitals.....		Iowa City.....	H. D. Kerr.....	20,198	86	....	\$20	2	2	7/1	24	....	....
Charity Hospital.....		New Orleans.....	A. Granger.....	21,210	100	....	\$25	1	1	7/1	24	2,254	1,246
.....		New Orleans.....	J. C. Rodiek.....	10,855	35	....	\$25	1	0	7/1	12	424	180
Massachusetts General Hospital.....		Baltimore.....	J. W. Pierson.....	16,336	43	....	None	1	1	7/1&9/1	12-24	631	406
Massachusetts Memorial Hospitals.....		Baltimore.....	H. J. Walton.....	9,046	47	....	None	1	1	7/1	24	583	258
Peter Bent Brigham Hospital.....		Boston.....	S. A. Robins.....	6,133	39	....	\$35	1	0	7/1	12	243	123
University Hospital.....		Boston.....	P. F. Butler.....	41,492	94	....	\$83	1	0	Varies	12	2,762	919
City of Detroit Receiving Hospital.....		Boston.....	G. W. Holmes.....	15,620	44	....	\$42	1	1	1/1	12	426	221
Graec Hospital.....		Boston.....	G. Levene.....	7,544	31	....	\$50	3	0	7/1	36	256	140
Harper Hospital.....		Ann Arbor, Mich.....	M. S. Sosman.....	4,714	46	....	\$62	1	1	Varies	36	356	202
Henry Ford Hospital.....		Detroit.....	F. J. Hodges.....	21,582	81	....	\$25	3	3	7/1	36	763	438
Hurley Hospital <sup>2</sup> .....		Detroit.....	J. C. Kenning.....	21,365	100	....	\$33	1	1	7/15	24	2,009	617
University Hospitals <sup>1</sup> .....		Detroit.....	R. H. Stevens.....	15,444	27	....	\$50	1	0	Varies	36	656	182
St. Louis City Hospital.....		Detroit.....	L. Reynolds.....	18,803	12	....	\$25	1	0	7/1	12	572	139
Creighton Memorial St. Joseph Hosp.....		Flint, Mich.....	H. P. Doub.....	10,045	....	....	\$130	1	1	9/1	12	483	218
University of Nebraska Hospital.....		Minneapolis.....	M. W. Clift.....	10,300	60	....	\$75	1	0	7/1	36	637	213
Newark Beth Israel Hospital <sup>2</sup> .....		St. Louis.....	L. Rieger.....	9,203	12	....	\$50	2	0	7/1	36	487	342
Jewish Hospital.....		St. Louis.....	L. Sante.....	18,481	100	....	\$75	1	1	7/1	24	1,768	778
Kings Cour.....		Omaha.....	J. F. Kelly.....	7,587	17	....	\$25	1	0	12/1	36	313	89
Long Island.....		Omaha.....	H. B. Hunt.....	3,558	100	....	\$50	1	0	7/1	12	135	118
Methodist.....		Newark, N. J.....	N. J. Furst.....	11,705	6	....	....	1	0	10/1	12	473	187
Buffalo City Hospital.....		Brooklyn.....	M. G. Wasch.....	15,181	24	....	....	1	0	1/1&7/1	....	539	168
Queens General Hospital.....		Brooklyn.....	A. B. Friedman.....	57,534	100	....	\$15	1	0	Varies	24	5,566	1,110
New Rochelle Hospital.....		Brooklyn.....	A. L. L. Bell.....	9,145	7	....	\$22	1	0	7/1	12	297	188
Bellevue Hospital <sup>1,15</sup> .....		Brooklyn.....	G. V. Cramp.....	9,821	10	....	\$30	1	0	7/1	12	317	93
Beth Israel Hospital.....		Buffalo.....	C. Orr.....	10,532	65	....	\$68	1	1	7/1	86	1,102	373
Bronx Hospital.....		Jamaica, N. Y.....	I. B. Startz.....	13,426	100	....	\$15	1	0	7/1	12	608	509
Lenox Hill Hospital.....		New Rochelle, N. Y.....	A. J. Chliko.....	4,879	6	....	\$50	1	0	7/1	12	173	66
Montefiore Hosp. for Chronic Diseases <sup>15</sup>		New York City.....	L. J. Friedman.....	62,112	100	....	....	5	0	1/1&7/1	12	3,485	1,695
Morrisania City Hospital.....		New York City.....	I. S. Hirsch.....	7,790	45	....	None	3	0	1/1&10/1	12	827	80
Mount Sinai Hospital.....		New York City.....	W. Snow.....	11,529	24	....	\$50	1	0	1/1	12	336	120
New York Hospital.....		New York City.....	W. H. Stewart.....	11,847	24	....	\$25	1	0	1/1	24	311	131
New York Post-Graduate Medical School and Hospital.....		New York City.....	A. J. Bendick.....	1,770	88	....	\$50	1	0	7/1	12	486	880
Presbyterian Hospital.....		New York City.....	S. F. Weitzner.....	13,711	100	....	\$15	1	0	1/1	12	1,011	318
St. Luke's Hospital <sup>2</sup> .....		New York City.....	L. Jacobs.....	15,745	55	....	\$50	2	1	1/1&7/1	18	866	451
Strong Memorial and Rochester Municipal Hospitals.....		New York City.....	J. R. Carty.....	18,967	23	....	\$25	1	2	7/1	36	587	323
Sea View Hospital.....		New York City.....	W. H. Meyer.....	9,554	13	....	\$30	1	1	7/1&11/1	12	313	121
Grasslands Hospital.....		New York City.....	R. Golden.....	19,326	30	....	\$42	1	2	7/1	36	....	....
Duke Hospital.....		New York City.....	E. J. Ryan.....	8,009	48	....	....	1	0	1/1	12	375	161
Cincinnati General Hospital.....		Rochester, N. Y.....	S. L. Warren.....	13,550	63	....	\$42	1	1	7/1	12	211	137
Jewish Hospital.....		Staten Island, N. Y.....	H. K. Taylor.....	16,648	100	....	\$100	1	0	1/1&7/1	12	432	153
City Hospital.....		Valhalla, N. Y.....	A. G. Debbie.....	5,892	86	....	\$75	1	0	9/1	24	450	320
State University and Crippled Children's Hospitals.....		Durham, N. C.....	R. J. Reeves.....	10,954	56	....	\$42	3	0	7/1	36	365	232
University of Oregon Medical School Hospitals.....		Cincinnati.....	S. Lange.....	15,834	87	....	....	1	2	7/1	24	1,521	704
Hosp. of the University of Pennsylvania.....		Cincinnati.....	S. Brown.....	5,713	20	....	\$250	1	0	7/1	12	226	61
Pennsylvania Hospital.....		Cleveland.....	H. T. Karsner.....	14,452	97	....	\$42	1	0	7/1	12	1,529	670
Philadelphia General Hospital.....		Cleveland.....	E. Freedman.....	18,469	35	....	\$25	1	0	7/1	12	716	408
Temple University Hospital.....		Oklahoma City.....	J. E. Heatley.....	6,455	71	....	\$50	1	0	7/1	12	321	149
Roper Hospital.....		Portland.....	D. L. Palmer.....	6,839	100	....	\$40	1	0	7/1	12	714	353
Baylor University Hospital <sup>1</sup> .....		Philadelphia.....	H. K. Panoeast.....	11,201	28	....	None	1	0	7/1	12	313	206
Parkland Hospital.....		Philadelphia.....	P. A. Bishop.....	8,849	28	....	\$20	2	0	7/1	12	442	233
John Sealy Hospital.....		Philadelphia.....	B. P. Widmann.....	23,845	95	....	\$100	1	0	7/1	12	3,780	1,947
Medical College of Virginia, Hospital Division.....		Philadelphia.....	W. E. Chamberlain.....	9,681	38	....	\$40	3	0	7/1	36	416	189
University of Virginia Hospital.....		Charleston, S. C.....	H. Rudisill, Jr.....	7,644	71	....	\$40	1	0	7/1	12	622	237
State of Wisconsin General Hospital.....		Dallas, Tex.....	C. L. Martin.....	13,787	20	....	\$12	1	0	7/1	....	372	127
		Dallas, Tex.....	P. E. Vlghy.....	8,935	91	....	....	1	0	1/1	12	791	108
		Galveston, Tex.....	J. B. Johnson.....	5,835	50	....	\$60	1	0	7/1	12	372	194
		Richmond.....	F. B. Manderville.....	9,979	5	....	\$50	1	0	7/1	24	740	309
		University.....	V. W. Areher.....	8,173	30	....	\$75	1	1	7/1	36	416	188
		Madison.....	E. A. Poble.....	11,689	85	....	\$25	3	0	7/1	36	423	223

PHYSICAL THERAPY

Stanford University Hospitals.....	San Francisco.....	W. H. Northway.....	14,379	3	Yes	\$25	1	0	7/1	12	....	....
Michael Reese Hospital <sup>2</sup> .....	Chicago.....	.....	2,600	41	Yes	\$50	1	0	7/1	12	....	....

- a. Compensation arranged by medical school and hospital.

b. Salary varies.

c. In lieu of maintenance.

d. Report covers six months only.

e. Hospital facilities by affiliation.

1. Fellowships available.

2. Data as reported for 1936.

3. Mixed residencies represent general hospital experience of at least one year duration following an approved internship. All hospitals approved for intern training are also certified for general or mixed residencies.

4. Includes proctology.

5. Medical and surgical appointments.

6. Dental as well as medical degree required.

7. Research appointments available in medicine and surgery.

8. Includes obstetrics.

9. Includes neurosurgery.

10. Not a hospital; outpatient and home delivery service.
11. Training includes two years of service at City of Detroit Receiving Hospital in gynecology and two years at Herman Kiefer Hospital in obstetrics.

12. Orthopedic resident covers eye, ear, nose and throat service.

13. Apply to chief of service for information about affiliating hospitals.

14. Three assistant residents serve six months in obstetrics.

15. Separate appointments approved in roentgenology and in radiation therapy.

16. Includes dermatology.

17. Several services include obstetrics-gynecology.

18. Private and semi-private pavilions.

19. Admissions are confined to children.

20. No applications received.

21. Affiliating; usually with N. Y. Post-Graduate Medical School, New York City.

22. Includes thoracic surgery.

23. Hospital service confined to treatment of narcotics.

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, AUGUST 27, 1938

## EXAMINERS AND GRADING

In the selection of students for advanced work in college and for the professional schools, the record of previous scholastic aptitude as measured by "grades" is usually an important criterion. The proper interpretation and weight of high school and college grades have become an increasing concern of administrators in universities and professional schools. Hutchinson and Pugh<sup>1</sup> studied the differences in marks assigned not only by different examiners but also by the same examiner in the same subject for the same students at different times. In other words, they examined the examiners, tabulating the marks obtained by a group of twenty-five students in a series of examinations in eight subjects over a period of a year. Grades were recorded according to the decimal system. All the grades in each subject were totaled both for class work and for individual examinations. These totals were then subjected to analysis in relation to several variables, including individual students, individual instructors and the same instructor at different times. The marking for class work was found to be distinctly more lenient than that for examinations in most of the subjects. More surprising were the variations in total marks given by an individual examiner in different tests in the same subject. The higher differential grades for the same group of students in some subjects than in others was also striking. Apparently examiners differed among themselves as much as did the students. It is, however, a simple matter to adjust the students' marks to a common basis by allotting the same total for the class in all subjects. Gross deviations from the accepted standard due to the individual instructor's liberality or strictness in grading can thus be detected and corrected by simple algebraic adjustment.

More serious, Hutchinson and Pugh believe, is the discovery that an examiner often varies widely in his standard of marking the same group in the same

subject after an interval of two or three months. This source of variation is more difficult to control and should receive the attention of those who are responsible for the disposition of candidates for universities or professional schools. This variation in performance of examiners affects the choice of medical as well as other university students. It may affect also the certification of specialists.

Other known factors in student records have already received the consideration of advanced university and professional school administrators. President Conant<sup>2</sup> of Harvard in a recent report to the Board of Overseers states that there is an ever growing interest in defining each student's aptitudes and interests. As he points out, however, a man's success or failure in a professional school has been proved to be highly correlated with his record of college work. At Harvard the previous school record is corrected for the varying scholastic standards. To such adjustment it would now seem wise to add a factor of correction for those students whose scholastic average has been affected by unjustified variation in grading by examiners. The large extent to which the selection of medical students is influenced by present procedure insures the continued vital interest of the medical profession in this subject.

## LOCAL IMMUNIZATION OF THE NASAL MUCOSA

According to Walsh and Cannon<sup>1</sup> of the departments of surgery and pathology, University of Chicago, regional vaccination is the method of choice in the attempt to increase the specific portal resistance of the upper respiratory tract. Local vaccination allegedly gives a much higher concentration of specific antibodies in respiratory tissues than that obtained by active or passive somatic immunization.

The initial studies of local immunity of respiratory tissues by Walsh and Cannon<sup>2</sup> were made with type I pneumococcus infections in rabbits. They found that nasal instillation of relatively small volumes of virulent pneumococcus cultures into normal rabbits led to a fatal septicemia in about 90 per cent of the cases. Intranasal vaccination with a formaldehyde killed or autolyzed pneumococcus culture of the same type, however, conferred practically complete immunity against subsequent intranasal infection with the same strain. Local nonspecific irritants, such as alum, tannic acid or killed paratyphoid cultures, were without demonstrable effect. Intragastric immunization with the same pneumococcus vaccine gave little or no demonstrable increase in nasal resistance. Since intranasally vaccinated rabbits may have no demonstrable protective

1. Hutchinson, J. B., and Pugh, B. M.: A Note on the Importance of Differences Between Examiners in the Estimation of the Ability of Students, *Ann. Eugenics* 5: 107 (Jan.) 1938.

2. Conant, J. B.: Report of the President of Harvard University to the Board of Overseers, 1936-1937.

1. Walsh, Theodore E., and Cannon, Paul R.: *J. Immunol.* 35:31 (July) 1938.  
2. Walsh, Theodore E., and Cannon, Paul R.: *J. Immunol.* 31:131 (Oct.) 1936.

antibodies in the blood stream, as determined by the mouse protection test, the investigators concluded that local vaccination presumably caused a strictly local specific tissue immunity, the nature of which is at present unknown.

In order to throw light on the nature of this local tissue immunity, Walsh and Cannon<sup>2</sup> extended their studies to include *Bacillus typhosus* and *Bacillus paratyphosus*. Following routine somatic immunization with these vaccines, relatively high specific agglutinin titers develop in the blood stream, with about one tenth of this titer in aqueous extracts of the exsanguinated nasal mucosa. A blood titer of 1:4,000, for example, was usually associated with a 1:500 titer in the nasal extract, or a blood titer of 1:2,000 with a 1:250 tissue titer. A different quantitative relationship was observed after intranasal vaccination. Here the tissue titer humoral titer ratio was usually increased at least two-fold. In many instances the tissue agglutinins were of equal or even greater titer than those of the blood stream.

The investigators are inclined to interpret their results as evidence of a local formation of antibodies in nasal tissues. A qualitative identity of local tissue agglutinins and humoral agglutinins, however, has not yet been established. Conceivably tissue agglutinins and humoral agglutinins are of different specificities. The authors make the general conclusion that "regional vaccination would seem [to be] the preferable method of elevating the level of resistance of tissue at the portal of entry to the body." Whether or not the prophylactic efficiency can be increased by combining regional and somatic vaccination has not yet been determined.

#### FRANCE MAKES DIPHTHERIA IMMUNIZATION COMPULSORY

The Senate and the Chamber of Deputies of the republic of France passed a regulation making diphtheria immunization compulsory. This was promulgated by the president on June 25. The law reads:<sup>1</sup>

Antidiphtheria vaccination with l'anatoxine (toxoid) is compulsory during the second or third year of life. The parents or guardians are personally responsible for the carrying out of this measure, proof of which shall be furnished on admission to any school, nursery, vacation colony, or other assembly of children.

During the first year of application of the present article, all children under 14 years of age attending the schools, if they have not yet been vaccinated against diphtheria, shall be subjected to such vaccination.

The regulations for administration are to be rendered "according to the opinion of the Academy of Medicine and the Consultative Committee on Public Health of France."

This action is apparently the first by a major nation to make diphtheria immunization compulsory and uni-

versal. No penalty clause is attached to the measure as published nor is any authority to establish penalties specifically delegated to the Academy of Medicine and the Consultative Committee on Public Health, although the measure does say that these "shall decide the measures necessitated by the application of the preceding provision." The measure does provide that an immunized child shall not be admitted to any school, nursery, vacation colony or other assembly of children. This leaves an alternative for those persons who may be able to keep their children out of assemblages by employing private tutors or evading compulsory education regulations, such as may exist in France. Obviously, such legislation cannot be enforced without a large force of investigators and administrators.

From the scientific point of view the provision that toxoid shall be administered during the second or third year of life is interesting. The practice in this country, supported by overwhelming consensus of medical and public health opinion, is to advocate diphtheria immunization as early as the eighth month and not later than the first year. This is on the basis of mortality experience. The highest diphtheria mortality is in the first two years of life and there is little mortality after 5. Yet for the first year the French act requires all children under 14 years of age to be immunized against diphtheria and furthermore to be immunized with toxoid. Experience in the United States with untoward reactions following toxoid has led to the general practice of limiting its use to children under 12, toxin antitoxin being used for older persons who, because of special liability to exposure to diphtheria, may require immunization.

Undoubtedly the new law will aid in preventing epidemics if it is even reasonably well enforced. Godfrey<sup>2</sup> showed that immunization of 30 per cent or more of the children of preschool age will break the chain of infection and prevent epidemics. It will not, however, prevent the appearance of sporadic cases. As diphtheria recedes from the epidemic status it also recedes from the public consciousness. Sporadic cases are more likely to go unrecognized and therefore to be neglected. This causes a trend toward a low morbidity incidence and low mortality on a population basis, but a high case fatality rate.

The experience of the United States with immunization against diphtheria has shown that constructive and persistent local leadership and education are effective in eliminating diphtheria. The experience of France with compulsory immunization should be watched with interest as a comparison. After ten years of observation, which may include two epidemic cycles of uncontrolled diphtheria, the truth about the success or failure of compulsory immunization may be determined.

1. Diphtheria Immunization Made Compulsory in France, *Pub. Health Rep.* 53:1301 (July 29) 1938.

2. Godfrey, E. S., Jr.: Study in the Epidemiology of Diphtheria in Relation to the Active Immunization of Certain Age Groups, *Am. J. Pub. Health* 22:237 (March) 1932.

## Current Comment

### DOCTORS IN EMBRYO

The annual review of medical education, appearing elsewhere in this issue, presents a summary of the most important phases of medical education in the United States and Canada. These data show the kind and extent of preliminary education which is required for admission to medical schools, also the requirements for graduation and licensure. The number of schools and the number of medical students over a period of more than thirty years show clearly the effects of raising educational standards and, more recently, of the enormous increase of the college population since the war. During the past year there were in the United States 5,194 medical graduates, of whom 237 were women. Some 636 foreign graduates were licensed. Regardless of academic or legal requirements, practically all students serve a hospital internship and many prolong this training by a further period of apprenticeship as hospital residents. The lists of hospitals approved for these purposes is therefore of inestimable value. The supervision of medical schools by the Council on Medical Education and Hospitals through periodic reports and personal visitation is a potent factor in raising the standards of medical education and practice.

### RESPIRATORY DISABILITY IN SILICOSIS

While in search of a simple method of determining the efficiency of the respiratory apparatus, Schlomovitz and his co-workers<sup>1</sup> recorded the variations in oxygen usage when measured by the increased oxygen demand occurring after a standardized form of physical activity. The closed circuit apparatus was used. On from three to five separate days, subjects were exercised after a twelve hour postabsorptive resting period. The exercise was carried out for from forty-five to sixty seconds and consisted of the twenty-five-time repetition of the shoulder to floor carriage of a 10 pound dumbbell grasped in each hand, or roughly, 5,000 foot pounds of work. In some instances from five to fifteen seconds elapsed after exercise before the tracings were started. The postexercise determinations were made with the subject breathing into the ordinary basal metabolism recording apparatus containing practically pure oxygen. For this part of the test no corrections were made for temperature, humidity or barometric pressure. Six groups were investigated in this manner: healthy persons and patients having thyroid dysfunction, tachycardia, cardiovascular disease, emphysema and silicosis. Although the number of subjects was not large the results on the whole were quite clear cut, and consistency in reaction on different days was evident. Five emphysematous patients without detectable cardiovascular disturbances gave oxygen consumption figures of a definitely lower range than the healthy subjects. The three patients with organic heart disease showed much higher than normal. The

group with chronic silicosis values in general showed a tendency to drop below the range for healthy persons, which was especially true for those with an uncomplicated second-stage silicosis. Three patients, however, with both second-stage silicosis and organic heart disease had values which reverted to the range of the healthy group, this apparently representing a summation of abnormal values in opposite directions. Schlomovitz and his co-workers believe that consistently abnormally low response to oxygen consumption after exercise in cases of second-stage silicosis is an indication of the presence of a functional or physical disability. Whatever the ultimate verdict on its adequacy as a clinical test, an interesting additional method of study has now become available.

### GRADUATE MEDICAL EDUCATION

The higher levels of medical training hold for the moment the center of the stage. Several factors contribute to this focusing of public interest. In the larger cities, at least, medicine is practiced increasingly by those who limit their work to a special field. One of the major divisions of graduate medical education deals with the preparation of the specialist. Examining boards in the specialties have formulated their requirements in terms of advanced study and have stimulated a demand not only for instruction in those phases of medical science related to the specialties but also for supervised clinical experience in the form of apprenticeships of adequate duration and graded responsibility. These apprenticeships are, as a rule, institutional rather than personal and are commonly called residencies. On page 832 is a list of approved residencies containing 3,700 services in twelve specialties in 451 hospitals as a part of the program for the training of specialists. Some institutions offer fellowships which are indistinguishable from residencies but which, in general, tend to lay more stress on systematic instruction and research. For those physicians who are not specialists, continuing instruction is no less important. The ever widening horizon of medical science and the constant development of medical skill in diagnosis and treatment make it imperative for every practitioner to keep abreast of the times by assimilating whatever is of permanent value in the mass of new material presented to the profession. To this end postgraduate schools have been established and postgraduate courses are offered by a number of universities. Such courses have, on the whole, been most profitable to the physicians who attend them, yet there are some who cannot readily leave their practices to avail themselves of these opportunities. To meet the needs of this group extension courses have been organized, usually under the auspices of a state medical society, which bring facilities for instruction almost to the doctor's door. On page 801 is a summary of the survey of this type of teaching which the Council on Medical Education and Hospitals has been conducting during the past year. Evidence collected from half of the states abundantly demonstrates the value of these efforts to enable the somewhat isolated practitioner to enjoy frequent association with the leaders of the profession.

1. Schlomovitz, B. H.; Thompson, A. B., and Glickman, L. G.: A Functional Test in Chronic Pulmonary Disease, *Am. Rev. Tuberc.* 37: 369 (April) 1938.



## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

### ARKANSAS

**New Maternity Center.**—The establishment of a maternity center in Jonesboro is under way, newspapers reported June 3. It is planned to offer complete maternity service through regularly conducted clinics for antepartum care with hospitalization for delivery. Only indigent and low income groups will be eligible for the service. The center will be conducted by the medical staff of St. Bernard's Hospital with the assistance of the American Legion auxiliary and the state board of health. In quoting figures showing the need for a unit in the county, it was stated that infant mortality in the state was 52.2 per thousand live births in 1937, while rural Craighead County showed a rate of 72.2 and Jonesboro a rate of 114.3 for the same period.

### CALIFORNIA

**Personal.**—Dr. Charles Weiss, director of the research laboratories of Mount Zion Hospital, San Francisco, has received a grant from the committee on medical research of the National Tuberculosis Association to be used for a study of the nature of the lysis of tubercle bacilli in cellular exudates. Dr. Weiss will be assisted by Alex Kaplan, formerly research fellow in physiology, University of California. —Dr. Ambrose P. Merrill Jr. has been appointed assistant superintendent of the San Francisco County Hospital, San Francisco. —Dr. Fred H. Lawrence has been appointed medical director of the Southern Pacific Hospital, San Francisco. —Dr. Archibald W. Truman, Bellflower, head of the medical department of the world's general conference of Seven Day Adventists, has been appointed superintendent of the denomination's sanatorium in Shanghai, China.

### COLORADO

**University News.**—Under the will of the late Dr. William C. Johnson, professor of pathology, University of Colorado School of Medicine, Denver, this school, on the death of relatives, will receive the remainder of a \$35,000 trust fund for study and research of the pathology and diseases of infancy and childhood. The will also bequeathed Dr. Johnson's medical books to the school library.

**State Medical Meeting in Estes Park.**—The Colorado State Medical Society will hold its sixty-eighth annual session at the Stanley Hotel, Estes Park, September 8-10, under the presidency of Dr. William T. H. Baker, Pueblo. Out of state speakers will include:

- Dr. Irvin Abell, Louisville, Ky., President, American Medical Association, The Acute Abdomen: Differential Diagnosis.
- Dr. James W. Kennedy, Philadelphia, Vaginal Hysterectomy and Its Indications.
- Dr. Claude D. Head Jr., Washington, D. C., Serum Therapy in Pneumococcal Pneumonia and Recent Reduction in Pneumonia Mortality Rates.
- Dr. Gilbert J. Thomas, Minneapolis, Diagnosis and Treatment of Subacute and Chronic Lesions of Tuberculosis in the Genital Tract.

Included among the Colorado physicians on the program are:

- Drs. Edward R. Mudge and George W. Stiles, Jr., Denver, Common Animal Parasites Transmissible to Man.
- Dr. Charles Walter Metz, Denver, Choice of Anesthetic Agent.
- Walter M. Scott, Ph.C., Denver, How to Secure a Safe Milk Supply.
- Dr. Vernon G. Feurink, Denver, The Office Treatment of Common Rectal Disorders.
- Dr. Clarke H. Barnacle, Denver, Newer Methods of Treatment in Psychiatry.
- Dr. Luman E. Daniels, Denver, Brain Tumors with Focal Symptoms.
- Dr. Lyman W. Mason, Denver, Role of the Thyroid in Menstrual Disorders and Sterility.
- Dr. John H. Spillane Jr., Colorado Springs, X-Ray Pelvimetry.
- Dr. John B. Farley, Pueblo, Treatment of Placenta Praevia.
- Harold Clark Thompson, L.L.R., Denver, What Is Expected of the Physician and Surgeon in Compensation Cases?
- Dr. William Senger, Pueblo, The Problem of Difficult Inguinal Hernias.
- Drs. George R. Kent and Kenneth C. Sawyer, Denver, Exophthalmic Goiter: Management of the Poor Surgical Risk.
- Dr. Edgar Durlin, Denver, Heart Disease in Colorado.
- Wilton W. Cogswell, D.D.S., Colorado Springs, Oral Lesions as Sources of Infections: Their Diagnosis and Treatment.
- Dr. Kemp G. Cooper, Denver, Causes of Dizziness.

Dr. William C. Service, Colorado Springs, The Role of Allergy in Migraine.

Dr. Franklin P. Gengenbach, Denver, Present Status of Contagious Diseases of Childhood: Prevention and Treatment.

Drs. Carl S. Gydesen and Bradford J. Murphey, Colorado Springs, Some Endocrine Dyscrasias Associated with Conduct Disorders in Colorado Springs Children.

There will be a symposium on automobile fractures and round table discussions. At the annual banquet Dr. John W. Amesse, Denver, will give an address entitled "Behind the Scenes in European Medicine."

### ILLINOIS

**Dr. Shaughnessy Again Director of Laboratories.**—Howard J. Shaughnessy, Ph.D., for the past year associate professor of bacteriology and public health at the University of Colorado School of Medicine, Denver, is again director of laboratories of the state department of health. Dr. Shaughnessy held the position from 1930 to 1937, when he went to Denver.

### Chicago

**Society News.**—The Chicago Council of Medical Women was addressed June 8 by Drs. Irene C. Sherman on "Psychosis in Children" and Beulah C. Bosselman, the treatment of psychoses; Dr. Melvin F. O. Blaurock showed a motion picture on metrazol treatment.

**New Neuropsychiatric Unit.**—Construction is expected to start late this year on a neuropsychiatric institute on the grounds of the Research and Educational Hospital, according to the state department of public welfare. The building will cost \$1,250,000, of which \$544,909 was supplied by a PWA grant. Present plans call for two towers of eight floors each to be connected by a two story unit. Fifty beds will be available for neurologic patients, while 100 will accommodate psychiatric patients. Arrangements have been made whereby the four medical schools in the city, Illinois, Northwestern, Chicago and Loyola, will have access to the psychiatric beds for teaching purposes. Twenty beds have been allotted to Dr. Paul L. Schroeder, director, Institute for Juvenile Research, for study and research. The neuropsychiatric institute will be administered by Dr. Major H. Worthington, director of Research and Educational Hospital; Drs. Harold Douglas Singer, professor of psychiatry, and Eric Oldberg, professor of neurology and neurological surgery, University of Illinois College of Medicine, will direct the psychiatric and neurologic divisions, respectively.

### IOWA

**Personal.**—Drs. George B. Maxwell, Davenport, and George A. Wiggins, Milan, were recently presented with gold buttons by the Iowa and Illinois Central District Medical Association in recognition of their completion of fifty years in the practice of medicine.

**Society News.**—A special meeting of the Linn County Medical Society was addressed in Cedar Rapids August 9 by Drs. William D. Haggard, Nashville, Tenn., on "Clinical Syndromes of Gallbladder Disease, Their Differentiation and Treatment," and Gershom J. Thompson, Rochester, Minn., "Transurethral Resection of the Prostate." Dr. James S. McLester, Birmingham, will discuss "Clinical Aspect of Nutritional Deficiency" before the society September 15. —At a meeting of the Dallas-Guthrie County Medical Society in Woodward July 21 the speakers included Drs. Lawrence D. Smith, Des Moines, on "Fundamentals of Endocrinology" and Ralph A. Reis, Chicago, "Treatment of Fibroids in Pregnancy." —Dr. James J. Morrow, Austin, Minn., discussed military medicine before the Fayette County Medical Society July 21.

—The Hardin County Medical Society was addressed in Eldora July 29 by Dr. Milo G. Meyer, Marshalltown, on psychoneurosis. —Dr. Arthur E. Davis, Scymour, addressed the Wayne County Medical Society July 14 on rheumatism.

### LOUISIANA

**New Director of Child Welfare.**—Dr. Christopher L. Mengis, Winnsboro, formerly director of the Franklin Parish health unit, has been appointed director of the division for services to crippled children in Louisiana. While the division was created by the 1936 legislature, no funds were available until 1938, when an appropriation was made. Now in process of organization, the division will be managed by the bureau of parish health administration of the state board of health. Dr. Mengis graduated at Tulane University of Louisiana School of Medicine, New Orleans, in 1900. Recently he has been conducting clinics for crippled children throughout the state.

**Women in Medicine.**—An exhibit of memorabilia showing the history of women in medicine is now on display at the Rudolph Matas Library, Tulane University of Louisiana School of Medicine, New Orleans. Some were lent to the library by the Orleans Parish Medical Society and others represent the personal collection of Dr. Mary Elizabeth Bass, assistant professor of clinical medicine at Tulane, a former president of the American Medical Women's Association. Illustrations include a copy of the most ancient known pictorial record of a woman physician, dated 3000 B. C.; it shows a woman physician presenting a boy to Isis; the patient has poliomyelitis. Others show a woman teaching anatomy to a fourteenth century class, a picture of Ann Morandi Manzolini dissecting a brain in 1760, a sketch of Lady Mary Montagu, pioneer sponsor of vaccination for smallpox, and a picture of St. Elizabeth and her thirteenth century dispensary. Among other material of historical interest is a photograph of Dr. Elizabeth Cohen, the first woman physician in New Orleans, who died in 1921.

### MARYLAND

**Committee on Industrial Health.**—At a meeting of the council of the Medical and Chirurgial Faculty of Maryland in Baltimore June 27 the following committee on industrial health was appointed: Drs. Allen D. Lazenby, chairman, Nathan B. Herman, William H. Howell, Raymond H. Hussey, Frank S. Lynn, Esther L. Richards, Robert H. Riley, Harry M. Robinson and Huntington Williams, all of Baltimore; Victor F. Cullen, State Sanatorium; William D. Noble, Easton; Edward P. Thomas, Frederick, and Richard B. Norment Jr., Hagerstown.

**Conference of Social Welfare.**—The Maryland State Conference of Social Welfare held its annual meeting in Baltimore June 9-11. The program was devoted to section meetings on tuberculosis, vocational education and rehabilitation, trends in recreational programs, community adjustment of the mentally deficient, community problems in the care of children discharged from institutions, rural and urban housing problems, and problems of special significance in the care of dependent children and the administration of relief. The speakers in the symposium on tuberculosis included:

Dr. Thomas B. Aycock, University Hospital.  
Dr. Humphrey Warren Buckler, city health department of Baltimore.  
Mr. W. B. Matthews, state tuberculosis association.  
Dr. Huntington Williams, commissioner of health of Baltimore.  
Dr. William A. Bridges, superintendent, Eudowood Sanatorium.  
Miss Pauline Bushey, board of state aid and charities.  
Dr. William Ross Cameron, deputy state health officer, Hagerstown.  
Dr. Charles H. Halliday, epidemiologist, state department of health.  
Mrs. Jean Loosli, nutritionist, state department of health.

### MICHIGAN

**Personal.**—Dr. Charles E. Long has resigned as a member of the board of education of Grand Haven after sixteen years' service.—Dr. Cornelius D. Mulder recently retired as a member of the Spring Lake board for education, having served for twenty-two years.—Dr. Vladimir K. Volk, Saginaw, was recently appointed to fill the newly created position of medical superintendent of Saginaw County hospitals; he is also health officer of the county.

**Hospital Building Program.**—The W. K. Kellogg Foundation of Battle Creek, the WPA and the PWA are cooperating with the communities of Allegan, Coldwater and Hillsdale in hospital building projects. Federal approval has already been given to a unit in Coldwater and work was expected to begin within a few days, it was reported July 31. Fifty beds are planned for the hospital. The units in Allegan and Hillsdale will have twenty-eight and sixty beds respectively, if they are approved by the government. The total cost of the units will be \$600,000, one half of which will be contributed by the Kellogg Foundation.

### MINNESOTA

**CCC "Surgeon" Court-Martialed and Dismissed.**—Hugh David Halstead, following his plea of guilty in the District Court at Minneapolis, June 1, to a charge of practicing medicine without a license, was sentenced to one year in the Minneapolis workhouse and placed on probation, according to the state board of medical examiners. The defendant had been tried before a military court at Fort Snelling April 19 on a charge of misrepresenting his rank as an officer and misrepresenting his qualifications as a physician. He pleaded guilty to both charges and was dismissed from the military service of the United States. In 1934 Halstead, after working as a truck driver and shoe salesman, worked as an intern at the Minneapolis General Hospital. From Jan. 1, 1935, to June 25 he was an intern at the Deaconess Hos-

pital, Minneapolis, at a salary of \$50 a month. When subsequent inquiry was made at the Deaconess Hospital as to why no investigation had been made of Halstead's credentials as a physician, officials at the hospital stated that because he had been at the Minneapolis General Hospital it was assumed that his credentials were in order. July 5, 1935, after fraudulently representing himself as a physician and a graduate of the Northwestern University Medical School and that he was licensed to practice medicine in Illinois, Halstead signed a contract to act as surgeon for the CCC camps in Minnesota. No investigation was made at that time to ascertain his qualifications. He was assigned to various camps, receiving a commission in September 1935 as a first lieutenant in the medical reserve corps of the U. S. Army; this commission was obtained on his fraudulent representations with respect to his medical training. Following his marriage in 1936 Halstead was paid \$262 a month by the government. In February 1938 inquiry was made concerning his qualifications, which led to his court-martial April 19. The only medical education he ever received was in the extension division of the University of Minnesota 1930-1931, when he was enrolled in a class in general inorganic chemistry. In the year 1931-1932 he failed in a similar course at the university.

### MISSISSIPPI

**Changes in Health Officers.**—Dr. Benjamin F. Hand Jr., formerly of Waynesboro, has been appointed itinerant health officer for the state board of health to aid county health officers in the examination of preschool children, it is reported. Dr. Benjamin A. Stafford Jr., formerly of Temple, Texas, has been appointed health officer for the Sharkey-Issaquena county unit, succeeding Dr. Robert H. De Jarrette, who was transferred to Alcorn County. Sharkey and Issaquena counties made joint appropriations for a combined full time health unit with centers in each county.

### MISSOURI

**Society News.**—The Northeast Missouri Medical Society was organized at a meeting of physicians of Clark, Scotland and Lewis counties in Kahoka recently. Dr. James R. Bridges was elected president and Dr. Harold G. Pudleiner, Canton, secretary.

**Hospital Association Adopts District Plan.**—To correlate its activities, the Missouri Hospital Association has divided the counties of the state into four districts, with a chairman in charge of each. It is planned to draw the various hospital workers of the state into these four units, each to serve as a center for the hospitals in the district. The units will be known as the Northeast, Southeast, Southwest and Northwest districts. The Missouri Hospital Association began in August to publish a monthly bulletin.

### MONTANA

**Scientific Session of State Society.**—The Medical Association of Montana will hold its annual scientific session in Lewistown September 5-6 with the Fergus County Medical Association acting as host. The following will speak:

Dr. Archibald F. O'Donoghue, Sioux City, Fractures of the Spine and Pelvis Associated with Other Injuries Following Automobile Accidents.  
Dr. John R. Kieley, Omaha, Pneumonia.  
Dr. Raymond W. McNeely, Chicago, Are Hemorrhaphies as Successful as They Should Be?  
Dr. Ashley W. Morse, Butte, The Sinus Problem.  
Dr. Lawrence G. Dunlap, Anaconda, Accuracy in Eye Examinations.  
Dr. Robert G. Allison, Minneapolis, X-Ray Therapy as Related to Treatment of Sinus Disease, Erysipelas and Skin Conditions.  
Dr. Henry Close Hesselstine, Chicago, Endocrinology in Gynecology.

Dr. Irvin Abell, Louisville, Ky., President, American Medical Association, will deliver the principal address at the annual banquet September 5 on "The Changing Social Order of Medicine." Dr. James C. MacGregor, Great Falls, president, state medical association, will also speak, and Dr. Thomas J. B. Shanley, Butte, will be the toastmaster. The Montana Academy of Oto-Ophthalmology will meet in Lewistown September 4.

### NEBRASKA

**Personal.**—The Scotts Bluff County Medical Society honored Dr. Frank W. Plehn, Scottsbluff, at its June meeting in recognition of his completion of forty-five years of practice; he has practiced thirty-one years in Scottsbluff.—Dr. and Mrs. Charles W. Doty, Beaver Crossing, were recently honored with a community reception in recognition of Dr. Doty's fiftieth anniversary in practice.—George Robert Coatsy, Ph.D., professor of biology, State Teachers College, Peru, has been appointed protozoologist of the U. S. Public Health Service.

## NEW HAMPSHIRE

**Society News.**—Dr. Lawrence R. Hazzard, Portsmouth, was elected president of the New Hampshire Surgical Club at the annual meeting recently in Nashua. Drs. Charles F. Nutter, Nashua, and William J. Paul Dye, Wolfeboro, were elected vice president and secretary, respectively. At a joint session with the Hillsborough County Medical Society Dr. Harold G. Lee, Boston, spoke on "Low Back Pains."

## NEW YORK

**Outbreaks of Typhoid.**—Five cases of typhoid occurred between June 23 and July 8 among a group of workmen building roads in Columbia County. The outbreak was attributed to drinking water, which was obtained from two springs known to have been polluted, though the exact source of the infection had not been determined, according to *Health News*.—Thirteen cases of typhoid appeared among residents and visitors in the village of Esperance during July. The only food or drink common to all the patients was raw milk. Investigation showed that on June 15 the dairy that supplied the families affected had begun to obtain extra milk from a new producer, who was found to be a carrier. He had previously sold his milk only to an ice cream plant, where there was adequate pasteurization.

**Federal Worker Denied Choice of Physician.**—Five WPA workers in Buffalo, injured June 27 while working on the new Buffalo Civic Stadium, were taken to the Marine Hospital, although other hospitals were nearer, because they were federal workers, according to the *Bulletin* of the Medical Society of the County of Erie. The president of the county medical society took exception to this action because it denied free choice of physician or hospital, as provided in the workmen's compensation law of New York. On inquiry the families of the injured workers agreed that they preferred to have the services of their family physicians. One family physician, however, visited his patient at the Marine Hospital and was not allowed to treat him as a compensation case. The industrial commission of the state, when asked for a ruling in this case, stated that "when employees are in WPA service, the state of New York has no jurisdiction and the Compensation law does not cover, as they are employed by and paid 100 per cent by the Federal Government."

## New York City

**Personal.**—Dr. Carl Eggers was elected president of the Alumni Association of the College of Physicians and Surgeons of Columbia University at its recent annual meeting. Dr. Louis M. Rousselot is secretary.

**Burn Six Tons of Marihuana.**—More than six tons of marihuana, valued at \$13,000, was burned by narcotic control officials July 29 in Brooklyn. The collection was gathered from fields in the five boroughs by the Narcotic Bureau of the Municipal Police Department.

**A New Foundation.**—The William J. Wollman Foundation was recently organized by the executors of Mr. Wollman's estate to administer a trust fund of \$5,000,000, which will become available on the death of Mr. Wollman's sister, to be devoted to public charitable, educational and scientific purposes. Mr. Wollman, formerly head of the securities firm of William J. Wollman and Company, died March 27, 1937.

**Course on Eye Conditions.**—New York University and Columbia University are again offering courses on eye conditions in cooperation with the bureau of services for the blind, New York State Department of Social Welfare, it is announced. The course is given in evening sessions at both universities and is attended by teachers, social workers, school and public health nurses and workers in allied fields. Inquiries may be addressed to the Secretary, Teachers College, Columbia University, 525 West One Hundred and Twentieth Street; Prof. Helen C. Manzer, School of Education, New York University, Washington Square, or Miss Ruth B. McCoy, director, prevention of blindness service, New York State Department of Social Welfare, 205 East Forty-Second Street.

**Cornell to Exchange Students with Havana.**—Committees representing Cornell University Medical College and the University of Havana Faculty of Medicine have arranged for exchange of students and teaching staff for periods of study. Four undergraduate students and/or members of the teaching staff of Cornell will study parasitology, tropical diseases or any other subject of special interest for six weeks in the summer in Havana under the auspices of the university. Three

undergraduates in medicine and/or members of the teaching staff of the University of Havana will have the opportunity of studying at Cornell for a period of eight weeks, one each in the fall, winter and spring. Each university agreed to grant to each visitor on satisfactory completion of the work a certificate covering the studies pursued and the time employed thereon. The studies at the respective schools will be supervised by special committees. Dr. Wilson G. Smillie is chairman of the committee at Cornell and Dr. Alberto Inclán of the one in Havana. The agreement is in effect for one year.

## NORTH CAROLINA

**News of Health Officers.**—Dr. Gaston W. Rogers, U. S. Army Medical Corps, retired, has been appointed assistant district health officer on a full time basis in charge of Chatham, Person and Orange counties with headquarters in Pittsboro, it is reported.—Dr. Fletcher R. Adams, formerly of Davidson, has been appointed head of the health unit in Union County.—Dr. Murray P. Whichard, Edenton, has been appointed health officer of Craven County, succeeding Dr. John S. Anderson, New Bern, who recently went to Cabarrus County.

**Open Campaign Against Syphilis.**—The North Carolina state board of health opened its campaign against syphilis July 1, when funds became available from the Reynolds Foundation, created several months ago by the North Carolina tobacco family, and from the U. S. Public Health Service under the LaFollette-Bulwinkle law. About \$120,000 furnished by the Reynolds Foundation will be spent in twenty counties enlarging and increasing the number of clinics. Forty-eight clinics are now operating in these counties and it is expected that thirty-five physicians and as many nurses will shortly be added to their staffs. Cities and counties in this group will match the funds supplied by the Reynolds Foundation. For the area outside these twenty counties the board of health has a state appropriation of \$25,000 a year and a federal grant of \$85,000, and much of this money will be matched by city and county appropriations.

## OHIO

**Personal.**—Dr. Joseph T. Smith, assistant clinical professor of obstetrics, Western Reserve University School of Medicine, Cleveland, has joined the faculty of Tufts College Medical School, Boston, to conduct short courses in gynecology and obstetrics for general practitioners under the graduate education plan of the Bingham Associates Fund.

**Honored for Fifty Years of Practice.**—Dr. John G. Wishard, Wooster, was the guest of honor at the annual banquet of the Wayne County Medical Society in Orrville recently, celebrating his completion of fifty years in the practice of medicine. Dr. Wishard, who graduated from the Medical College of Indiana, Indianapolis, in 1888, founded the American Hospital in Teheran, Persia, and was its director for twenty years.—Dr. Frederick S. Heller, Oak Harbor, received a gold plaque from the Ottawa County Medical Society at a meeting in Danbury July 21, in honor of his fifty years of medical practice. Dr. Heller graduated from the University of Michigan Medical School, Ann Arbor, in 1888.

## PENNSYLVANIA

**District Meeting.**—The annual meeting of the Sixth Council District of the Medical Society of the State of Pennsylvania was held at the Birmingham School, Birmingham, August 25. The speakers included Drs. Charles W. Dunn and Gilson C. Engel, Philadelphia, on "Review of Newer Aspects of Endocrine Therapy" and "Diseases of the Thyroid. Their Diagnosis and Treatment" respectively. Dr. Peter H. Dale, State College, gave a history of the Center County Medical Society and several officers of the state society discussed current social and economic questions.

## Philadelphia

**Society News.**—The Philadelphia College of Physicians will receive all pamphlets and data on tuberculosis accumulated by the late Dr. Lawrence F. Flick, according to a specific bequest in his will, newspapers report.

**Personal.**—Dr. Hayward R. Hamrick has been appointed medical director of the Curtis Clinic of Jefferson Medical College.—Dr. Chevalier Jackson has been reelected president and professor of bronchoscopy at the Woman's Medical College of Pennsylvania. Although Dr. Jackson has retired from clinical work, he will continue with didactic teaching. Temple University School of Medicine announces that Dr. Jackson has

resigned as professor of bronchoscopy and esophagology and has been elected honorary professor of broncho-esophagoscopy. He has also been designated consultant in research in the broncho-esophagologic laboratories at Temple.

### SOUTH CAROLINA

**Piedmont Assembly.**—The fourth annual Piedmont Post Graduate Clinical Assembly will be held at the Anderson County Hospital, Anderson, September 13-15. Among the speakers will be Drs. Samuel F. Ravenel, Greensboro, N. C., on "Nephritis in Children"; Kenneth M. Lynch, Charleston, "Lung Changes in Pneumonia," and William H. Kelley, Charleston, "Management of Lobar Pneumonia." On the last day there will be a joint meeting with the South Carolina division of the Southeastern Surgical Congress, with Drs. Frank H. Lahey, Boston, and Robert Lee Sanders, Memphis, Tenn., on "Diseases of the Thyroid Gland" and "Common Diseases of the Colon" respectively. The Anderson County Medical Society will sponsor a dinner in the evening at which Dr. Lahey will speak on anesthesia and Dr. Sanders on disease of the gallbladder.

### TENNESSEE

**Dr. Shoulders Honored.**—The Nashville Academy of Medicine gave a dinner July 26 in honor of Dr. Harrison H. Shoulders, Nashville, secretary of the Tennessee State Medical Association and editor of the association's journal, who was elected Speaker of the House of Delegates of the American Medical Association at the San Francisco Session. Dr. Irvin Abell, Louisville, Ky., President of the American Medical Association, made the principal address. Other speakers who paid tribute to Dr. Shoulders included Drs. Elmer L. Henderson, Louisville; William D. Haggard, William B. Anderson, Alfred Blalock and Charles C. Trabue IV, Nashville; Ernest R. Zemp, Tom R. Barry and Elbert G. Wood, Knoxville; Hiram B. Everett, Memphis, and George Williamson, Columbia; Charles Cornelius, attorney, and Judge W. H. Swiggert. Dr. Holland M. Tigert, Nashville, was toastmaster. Dr. William C. Dixon, speaking for the Nashville profession, presented to Dr. Shoulders a gavel "cut from a hickory tree from the home of Andrew Jackson and to be used in presiding over the House of Delegates."

### TEXAS

**Changes in Health Officers.**—Dr. Robert W. Taylor, Lufkin, has been appointed health officer of Lufkin, succeeding Dr. Denman C. Hucherson, resigned.—Dr. Don Price, secretary of the Henderson County Medical Society, has been named health officer of Athens to succeed Dr. John K. Webster.—Dr. Isaac F. Hudson is the new health officer of Stamford, succeeding the late Dr. Nathan H. Bickley.

**Hospital News.**—The Raymondville Hospital was opened for public inspection June 5. The hospital is owned and operated by Drs. Charles C. Conley and Ervin E. Baden on an open staff basis, any physician in good standing in the Cameron-Willacy Counties Medical Society being permitted to use it.—A new hospital will be constructed in Littlefield costing \$50,000 and accommodating twenty-five patients, it is reported.—The new Montgomery County Hospital, Conroe, will soon be ready for patients, it is reported. The building cost \$106,000 and will provide for forty patients.

### UTAH

**Plague Infection.**—According to *Public Health Reports*, plague infection was found in tissue from one ground squirrel secured June 28 at the south end of Strawberry Reservoir, Wasatch County, and a pool of 132 fleas collected from fifty-two ground squirrels shot July 2 on Dean Ranch, 1 mile west of Woodruff, Rich County.

### WEST VIRGINIA

**State Medical Election.**—Dr. Ray M. Bobbitt, Huntington, was elected president of the West Virginia State Medical Association at its annual session in White Sulphur Springs July 12, succeeding Dr. Charles W. Waddell, Fairmont. Drs. Harold D. Gunning, Roncverte, and James L. Blanton, Fairmont, were chosen vice presidents. White Sulphur Springs was again chosen as the place for the next annual meeting.

**Society News.**—Dr. George E. Gwinn, Seckley, addressed the Fayette County Medical Society, Oak Hill, June 7, on "Collapse Therapy in Pulmonary Tuberculosis."—Dr. Arthur

M. Shipley, Baltimore, addressed the Kanawha Medical Society, Charleston, June 14, on "Surgery of the Heart."—At the meeting of the Monongalia County Medical Society, Morgantown, recently, Dr. John C. Kerr, Wheeling, discussed "Common Skin Diseases of Interest to the General Practitioner." Dr. Charles C. Higgins, Cleveland, addressed a joint meeting of Monongalia, Marion and Harrison county medical societies at Morgantown recently on "Prevention of Recurrent Calculus Formation."

### WISCONSIN

**District Meetings.**—The annual meeting of the Fourth Councilor District of the State Medical Society of Wisconsin was held in Lancaster recently. The guest speakers were Drs. Gordon B. New, Rochester, Minn., on "The Diagnosis and Treatment of Mouth Lesions from the Standpoint of the General Practitioner"; John B. MacLaren, Appleton, "Skull Fractures"; James C. Sargent, Milwaukee, "Fundamental Principles in Conservative Renal Surgery," and Edwin F. Schneiders, Madison, "Obstetrical and Gynecological Emergencies." Dr. Sargent, president of the state medical society, also discussed the society's program at the evening banquet.

**Meetings of Specialists.**—The Central Wisconsin Society of Ophthalmology and Otolaryngology held its recent annual meeting in Marshfield. The speakers were Drs. Avery D. Prangen, Rochester, Minn., on "Anomalies of the Convergence-Divergence Mechanism"; Louis E. Prickman, Rochester, "Allergy in Relation to Eye, Ear, Nose and Throat"; Arthur Kovacs, Milwaukee, "Treatment of Nasal Fractures and Plastic Surgery of the Nose," and Stephan Epstein, Marshfield, "Roentgen Therapy in Eye, Ear, Nose and Throat."—The section on radiology of the State Medical Society of Wisconsin held its annual meeting June 3-4 in Eau Claire. Dr. Edward Schons, St. Paul, was the guest speaker, discussing super-voltage therapy. Round table discussions formed the remainder of the program.

**State Medical Meeting at Milwaukee.**—The ninety-seventh annual meeting of the State Medical Society of Wisconsin will be held in Milwaukee September 14-16 under the presidency of Dr. Albert E. Rector, Appleton. Guest speakers who will address general sessions include:

- Dr. Borden S. Veeder, St. Louis, Relation of the Private Physician to the School Health Program.
- Dr. Wright R. Adams, Chicago, Electrocardiography in the Prognosis and Treatment of Diseases of the Heart by the General Practitioner.
- Dr. Samuel Brown, Cincinnati, Differential Diagnosis of Abdominal Lesions by Roentgenography.
- Dr. David Slight, Chicago, Emotional Problems and Disorders in General Medical Practice (the Rogers Memorial Lecture).
- Dr. Charles P. Emerson, Indianapolis, The Power of Suggestion.
- Dr. Carey P. McCord, Detroit, Occupational Diseases in Medical Practice.
- Dr. William L. Benedict, Rochester, Minn., Office Treatment of Eye Injuries.
- Dr. Howard H. Cummings, Ann Arbor, Mich., Office Treatment of Gynecologic Conditions.
- Dr. Herman L. Kretschmer, Chicago, The Significance of Blood in the Urine.
- Dr. John S. Coulter, Chicago, Indications and Contraindications for Use of Physical Therapy in General Practice.
- Dr. Morris Edward Davis, Chicago, Accidents in Labor.
- Dr. Max M. Peet, Ann Arbor, Mich., Sympathectomy and Hypertension.
- Dr. James H. Hutton, Chicago, Endocrine Preparations of Proved Therapeutic Value.

Dr. John H. J. Upham, Columbus, Ohio, will contribute a commentary on the general program Thursday afternoon. In addition, the following guests will address section meetings:

- Dr. Samuel Salinger, Chicago, Septum Deviation in Relation to the Twisted Nose.
- Dr. John J. Shea, Memphis, Tenn., Laryngologic Aspects of Hematopoietic Disease.
- Dr. Charles B. Puestow, Chicago, Surgery of the Common Bile Duct; The Effect of Drugs on Intestinal Motility.
- Dr. Arthur F. Bratrud, Minneapolis, The Injection Method for the Treatment of Hernia.
- Dr. Raymond W. McNealy, Chicago, Preparation of the Jaundiced Patient for Operation.
- Dr. Harry E. Mock, Chicago, Conservative Treatment of Gallbladder Disease.
- Dr. Kretschmer, Management of Prostatic Disease.
- Dr. Meyer Wiener, St. Louis, Plastic Surgery of the Lids and Sockets.
- Dr. Benedict, Low Grade Occult Inflammatory and Neoplastic Diseases of the Orbit.
- Dr. Roger L. J. Kennedy, Rochester, Minn., Intestinal Upsets in Children.

Special features of the meeting will be a symposium on "Common Office Treatments," a "Question Box" Friday afternoon with Dr. Eben J. Carey, Milwaukee, as master of ceremonies, and round table luncheons Thursday and Friday noons at the Hotel Schroeder.

## GENERAL

**Examination in Urology.**—The next examination of the American Board of Urology will be held in New York Jan. 13-15, 1939. All applications should be received not later than October 1. Additional information may be obtained from Dr. Gilbert J. Thomas, secretary, 1009 Nicollet Avenue, Minneapolis, Minn.

**Society News.**—Dr. Warren T. Vaughan, Richmond, was chosen president-elect of the American Society for the Study of Allergy at its recent annual meeting and Dr. Harry L. Alexander, St. Louis, was installed as president. Dr. Robert L. Benson, Portland, Ore., was elected vice president and Dr. James Harvey Black, Dallas, Texas, secretary. The 1939 meeting will be held in St. Louis, in conjunction with the annual session of the American Medical Association.—The American Association for the Study of Neoplastic Diseases will meet in Washington, D. C., September 8-10.

**Coroners to Meet in St. Louis.**—The National Association of Coroners will hold its annual convention in St. Louis August 29-31 at the Statler Hotel. Among the speakers will be:

- Dr. Samuel H. Gray, St. Louis, Causes of Sudden Death.
- Dr. Samuel R. Gerber, Cleveland, Studies of Alcoholism and Its Relation to Traffic Accidents.
- Dr. Matthew W. Weiss, St. Louis, Signs of Criminal Abortion.
- Dr. Downey L. Harris, St. Louis, Pathology and Communicability of Human Rabies.
- Dr. Thomas B. W. Leland, San Francisco, Experience as Coroner in Safety Matters.
- Gordon H. Scott, Ph.D., St. Louis, Use of the Spectrograph.

**Tuberculosis Hospital and Sanatorium Directory.**—The National Tuberculosis Association has compiled by states the sanatoriums, preventoriums and general hospitals having departments for tuberculous patients in the United States, Alaska, Hawaii, Puerto Rico and the Philippine Islands. The institutions are listed alphabetically under the several states except that the state sanatoriums are listed first in all cases and the federal government hospitals are listed separately. There is a brief account of each institution, showing when it was opened, its bed capacity, the type of tuberculous patient admitted, and the names of the superintendent and the medical director. Altogether there are listed 749 institutions with 92,786 beds for tuberculous patients. This is an increase of 5,869 beds since 1934, when the previous edition of this directory was published. These figures represent beds actually in operation in April 1938, while an additional 5,126 beds are recorded as under construction or definitely provided for. New state sanatoriums have been opened in Arizona, Florida, Michigan, Mexico, New York City, North Carolina and Texas. There are now available for tuberculous patients in continental United States seventy-eight federal institutions with 8,362 beds, 399 state, county and municipal institutions with 64,042 beds, seventy-one private institutions with 3,493 beds, and 184 semi-private institutions with 13,795 beds.

**Physical Therapy and Occupational Therapy Meetings.**—The seventeenth annual session of the American Congress of Physical Therapy and the twenty-second annual meeting of the American Occupational Therapy Association will be held at the Palmer House, Chicago, September 12-15. The formal opening session of the congress of physical therapy will be held Monday evening September 12, with welcoming addresses by Drs. Robert H. Hayes, president of the Chicago Medical Society, and Samuel E. Munson, Springfield, president of the Illinois State Medical Society. Dr. Frank H. Krusen, Rochester, Minn., will make his official address as president of the congress on "The Contributions of Physical Therapy to Medicine" and other speakers will be Drs. Alfred W. Adson, Rochester, Minn., on "Chronic Recurring Sciatica: Diagnosis and Treatment of Ruptured Intervertebral Disks" and George Mosser Taylor, Los Angeles, "Manipulative Surgery, a Challenge to the Medical Profession." There will be a general session each day and various section meetings. The program includes symposiums on electroresection, short wave diathermy and peripheral vascular diseases. Wednesday the two organizations will hold a joint meeting at which the speakers will include Drs. Harry E. Mock, Chicago, on "Occupational Therapy in Fractures" and Francis J. Carr Jr., New York, "After-Care of Infantile Paralysis: Braces and Operations." There will also be a joint banquet Tuesday evening with Dr. Krusen as toastmaster. The speakers will include Drs. Morris Fishbein, Editor of THE JOURNAL, Chicago; Irving S. Cutter, dean, Northwestern University Medical School, Chicago, and Joseph C. Doane, Philadelphia, president of the occupational therapy association. The physical therapy congress will conduct an instruction seminar September 7-10.

## HAWAII

**Society News.**—Dr. Edward William Alton Ochsner, New Orleans, gave a series of lectures before the Honolulu County Medical Society, May 23-June 2, on various aspects of surgery. Dr. George W. Swift, Seattle, recently discussed cerebral hemorrhages before the society.

**Annual Meeting and Election.**—Dr. Harry L. Arnold, Honolulu, was elected president of the Hawaii Territorial Medical Association at the annual meeting of the association in May and Dr. Douglas B. Bell, Honolulu, was reelected secretary. Guest speakers at the meeting included Drs. John L. Reichert, Chicago, on "Treatment of Gonococcal Vaginitis"; John A. Wolfer, Chicago, "Further Evidence That Pancreatic Juice Reflux May Be an Etiologic Factor in Gallbladder Disease"; Edward William Alton Ochsner, New Orleans, "Pre-operative and Postoperative Care," and William D. Sansum, Santa Barbara, Calif., "Functional Indigestion."

## CANADA

**Annual Meeting in Alberta.**—The annual meeting of the Canadian Medical Association, Alberta Division, will be held in Calgary September 12-14. The guest speakers include Drs. Louis H. Newburgh, Ann Arbor, Mich.; John S. Coulter, Chicago; Melvin S. Henderson, Rochester, Minn.; Alfred T. Bazin, Montreal; Charles H. Hunter, Winnipeg; William A. Gardner, Winnipeg; Alfred Howard Spohn, Vancouver, and Kenneth A. MacKenzie, Halifax, president of the Canadian Medical Association. Dr. Bazin will address a public meeting on "Your Cancer Problem" and Dr. Newburgh on "Food in the Human System."

## Government Services

### Brigadier General for the Dental Corps

Leigh C. Fairbank, D.D.S., was recently appointed the first brigadier general in the dental corps of the U. S. Army, according to *Military Surgeon*. General Fairbank has been in charge of the orthodontic clinic at the General Dispensary in Washington for the past three years. He is a member of the American Association of Orthodontists and has been certified by the American Board of Orthodontia.

### Training for Medical Reservists

The tenth annual Inactive Status Training Course for Medical Reservists of the Army and Navy will be held at the Mayo Foundation, Rochester, Minn., October 3-15. Presentation of carefully selected subjects in military medicine are scheduled and special work in clinics and hospitals will be offered during the morning hours for those asking special assignments. The last three days of the course will be merged with the annual meeting of the Association of Military Surgeons of the United States, October 13-15. All medical department reservists are eligible for enrolment. Approved applicants will be enrolled on recommendation of the surgeon of the Seventh Corps Area or the surgeon of the Ninth Naval District. Applications should be forwarded through the respective headquarters of the officer concerned.

### Outbreak of Typhoid in Philippines

Eleven cases of typhoid were reported at Fort Mills, P. I., between December 29 and February 2 with two deaths, according to a recent review of the health of the U. S. Army. The outbreak was probably caused by a carrier, according to the report, since typhoid is prevalent in the native population and natives are customarily employed in the messes. This constitutes a hazard that is well recognized and all civilian food handlers are vaccinated. All these patients had been vaccinated and it could not be determined whether their infection was the result of massive doses of bacilli or of a degree of immunity insufficient to protect against small doses. The water supply at Fort Mills is unsatisfactory in many respects but has not been the avenue of transmission in any outbreak of intestinal disease. In the ten years 1928-1937 there were eighty-one cases of typhoid in the army, twenty-four of which were in the Philippines, eleven at Fort Mills. Of the cases at Fort Mills, three occurred in 1935, two in 1936, three in 1937, and one each in 1929, 1930 and 1934. One of the 1937 cases was included in the outbreak under discussion.



## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Aug. 8, 1938.

#### The Nostrum Evil

Notwithstanding repeated exposures the nostrum evil flourishes. In the House of Lords, Lord Horder called attention to the enormous growth in the quack medicine trade and the incongruity of exercising no control over the deleterious effects on health at a time when a serious effort is being made to improve national fitness. When he suggested dealing with this evil his friends said that he would have against him the vested interests of newspapers and their proprietors. It was becoming more obvious that the very head and front of the offense of quack medicines were the advertisements, so often grossly misleading if not actually fraudulent. It was said also that he would be charged with trying to create a monopoly for his profession and depriving the poor of a cheap cure. If there was any monopoly it lay with the trade that, at a cost of nearly as much as the total spent on hospital services, bled the public of between \$125,000,000 and \$150,000,000 a year. This largely unscrupulous monopoly batted chiefly on that part of the public which could least afford to feed it. If the physician thought only in terms of hard cash he would benefit by that unprincipled trade, which eventually made more patients for him.

The incongruity of the situation was obvious. On the one hand, the government had launched a campaign to improve the national physique. On the other hand, it totally failed to combat the campaign of quack medicines and foods, led by subtle and skilled generals bent on maintaining national ill health, so that they might have a ready market for their goods. For every \$500 which the government spent on making people health conscious, the nostrum venders paid \$5,000 to make them disease conscious. The group which purveyed medicines for nervous and digestive disorders budgeted nearly \$5,000,000 for advertisements alone during the coming year. In 1931 their shares stood at \$1.25; in the past three years they always stood at over \$15. A few proprietary preparations were good, and the claims made for them were reasonable as claims went. A great many that did little good or little harm were sold at fantastic prices. Now and again a remedy was sold that did definite harm. There was nothing to prevent trading in some new drug which was not on the poison schedule and concerning which experience of its action alone discovered its danger. An enormous number of preparations were fraudulent in the claims they made and the way in which these claims changed with no change in the nature of the "specific." The public was slowly learning that cancer and hernia are not cured by drugs, and advertisers were quick to realize this. People had recently become anxious about the prevalence of rheumatic disease. Straightway the venders orientated their advertisements in that direction.

Advertising had become a specialized profession. The maker of the nostrum or food handed the matter over to the advertisement specialist, with a large sum of money. The product was "put across" to the public, and there was a rake-off for both, as also for the newspaper proprietor and the advertising agent. The enormous increase in recent years of the mediums—newspapers, hoardings, busses, cinemas, wireless, post boxes and airplanes—indicated the appalling effects which that mass suggestion eventually must have on the country's health and morale. The advertisements had become a greater danger than the medicines they served to sell. Fear was the chief emotion on which they played. Not only the sick but the well were swindled. The report of the government committee on patent

medicines was printed twenty-four years ago. Its simple recommendations, registration, disclosure and censorship of advertisements, had never been implemented. Some papers were trying to control the evil by rejecting the grosser forms of exploitation, but the consequence was that they were penalized.

For the government Viscount Gage admitted that there was a case for controlling advertisements but stated it was difficult to guarantee that it would be effective. The attitude of the government would be dictated by public opinion. The difficulty was that the fault lay with the people who preferred to diagnose and treat their own ailments to using the immense state-aided medical schemes. This evasive reply is paralleled by an editorial in a leading paper, the *Daily Telegraph*. While admitting that Lord Horder has made out a strong case, it enlarges on the difficulty of devising a system of control "which shall be at once a perfect protection to the ignorant and credulous and yet not infringe legitimate interests." This comment ignores the fact that, as Lord Horder showed, the remedy is quite simple unless the paper regards fraudulent misrepresentation as a "legitimate interest."

#### Opening of Institute for Radiotherapy

Sir William Bragg, president of the Royal Society, opened the Meyerstein Institute of Radiotherapy at the Middlesex Hospital, the largest in the country for the treatment of cancer by radium and x-rays. It has been erected by Sir Edward Meyerstein at a cost of \$230,000. It is a compact and complete unit in which all forms of radiotherapy are available both for the inpatients and outpatients of the hospital and for private patients. There are four floors devoted to the treatment, while sixty-four beds in four wards and six private rooms house the patients who are under the care of the physicians and surgeons of the hospital. The northern half of the building is divided into treatment cubicles, all provided with duct-suction ventilation, giving a change of filtered air twelve times to the hour. The walls contain lead to prevent stray irradiation into the corridors, and the powerful tubes on the second floor have made it necessary to put lead in the floor to prevent irradiation of the patient in the cubicle below. In every cubicle there is two way communication between patient and radiographer by microphone and loud speaker. In the teleradium room mass irradiation at 8 cm. distance is carried out with 4 Gm. of radium. The transference of radium to and from the applicator head is effected pneumatically through a flexible tube, the force being provided by a vacuum device invented by the engineers of the hospital.

Sir William Bragg said that in the use of radioactivity in medicine the gap to be crossed between science and practice was of extraordinary width and the cure of malignant growths far removed from the science of atomic action, but the need for cure was so urgent that, however empiric, the treatment must be tried. On the other hand, if any understanding of the biologic processes which go wrong and of the action of radiation on them can be gained, the chances of success will be greater.

#### Hospital Accommodation for Air Raid Casualties

In future wars civilians as well as soldiers will have to suffer. The last of the problems which the government is attacking in a thorough way is hospital accommodation for air raid casualties. The aim is to pool hospital accommodation over a wide area and make provision for additional beds and equipment where this is necessary. Plans are also being made for moving as many as possible of the peace time sick from the hospitals best suited to deal with casualties and for transporting the casualties themselves from raided areas to those less vulnerable. Medical and other officers have been assigned to various districts in the country in order that they may maintain close contact with the local authorities and managers of

hospitals in working out schemes which can be put into immediate operation if required. In the London area a committee of experts presided over by Sir Charles Wilson, dean of St. Mary's Hospital, has been asked to advise on the special problems of a casualty organization for the metropolis.

## PARIS

(From Our Regular Correspondent)

July 30, 1938.

### Protest Against Nationalization of Hospitals

In the July bulletin of the society which has charge of public relations for the physicians of Paris and its suburbs a protest is raised against a plan which was discussed at the May meeting of the French Federation of Labor. In the June 12 issue of the federation journal appears an outline of a plan according to which a national health organization termed "service for preservation of human life" is to have full control of all hospitals. There is to be a director for each of the ninety departments of France, to whom the trustees of every hospital will be responsible. The departmental director will have a number of representatives of social organizations as his aids. The secretary of the medical society of Paris and its suburbs, in his comment on this plan, states that it will give ample opportunity for politicians to secure a number of lucrative jobs for themselves and their supporters. It will also open places on the medical staffs for unscrupulous physicians who are willing to do the bidding of the newly appointed government officials who will constitute the boards of trustees of the nationalized hospitals. No doubt many men of high professional standing will continue as heads of various hospital services, but they will be considered as government officials and will have to comply with the wishes of lay directors who will be only political appointees. The professional work of high grade medical men will be judged by persons who will be incompetent to do so. As to the patients, they will lose the physician-patient relation, which has meant so much in the past, when they could be cared for in private institutions by physicians whom they had the right to choose. The general practitioner will be obliged either to enter some other profession or to accept some subordinate position in a government medical service. Of course if he accepts the latter alternative he will be obliged to work only forty hours a week, as is now the case with all officials in France. Nationalization of hospitals is being fought by the members of the medical profession here with every possible means at their disposal.

### Experimental Production of Pulmonary Air Embolism

At the June 10 meeting of the Société médicale des hôpitaux of Paris the results of an experimental study of air embolism were reported by Prof. Maurice Villaret and Dr. René Vachera. They stated that formerly air embolism was of interest only as a complication of operations, but on account of the rapidly increasing number of artificial pneumothorax treatments of pulmonary tuberculosis the subject was of great interest to internists. The authors employed for the first time a technique in which the entrance of air into the cerebral vessels could be observed microscopically. They combined this method with introduction of air into the pulmonary veins. It was found, first, that in nine of ten experiments air embolism of the cerebral vessels appeared immediately after entrance of air into a pulmonary vein; second, that relatively small amounts of air, 5 cc. in some experiments and from 10 to 20 cc. in others, sufficed to produce cerebral air embolism; third, that simple puncture of a pulmonary vein as the result of a spontaneous aspiration of air was followed by a massive air embolism of the brain and death, and, fourth, that the general circulatory reactions were minimal, in the form of a slight increase of blood pressure.

The question arises whether or not the pulmonary circulation offers any resistance to the entrance of air. In eleven of thirty-two animals, or 34.3 per cent, the air passed beyond the pulmonary barrage. This passage took place slightly more often in dogs than in rabbits, whether anesthetized or not. When the air passed into the pulmonary veins its entrance could easily be verified.

Injection of air into a pulmonary vein is followed by very rapid respiration if the embolism is minimal or moderate and by apnea if a large amount of air has entered. The heart continues to beat for some time. The fall in blood pressure is very marked and immediate. Even the injection of from 30 to 50 cc. of air into a pulmonary vein is followed by a drop in blood pressure to zero. The cerebral symptoms are either dependent on those of the respiratory and cardiovascular systems or independent of them in the form of focal lesions such as hemiplegia, which may be of only a few hours' duration.

### The Secretion Test of Pancreatic Function

In an article which appeared in the *Presse médicale* for March 14, 1936, attention was called by Chiray and Bolgett to a test of pancreatic function which enables the clinician to differentiate icterus due to insufficiency of the external secretion of the pancreas from icterus due to hepatic causes or to obstruction of the extrahepatic ducts. At the June 24 meeting of the Société médicale des hôpitaux, a case was reported by Dr. Jean Cathala and his associates which confirms the value of this secretion test. The patient was a boy aged 12 with a history of intense icterus of two months' duration with alternation of acholic and bile-stained stools. The pancreatic origin of the icterus was definitely shown by three negative provoked-galactosuria tests, which indicated that the liver functioned normally although it was shown by palpation and plain roentgenograms to be greatly enlarged. The secretin test revealed a marked decrease in the functional activity of the pancreas. The boy had lost a great deal of weight, but as soon as he was given dextrose by the drop method rectally, kept in bed and placed on a strict diet he began to gain weight rapidly and the stools ceased to be alternately acholic and bile stained. These clinical evidences of returning pancreatic external secretion were confirmed by repeated secretin tests revealing a normal trypsin activity. This was not true of the lipase secretion, which was much slower in returning, as shown by the secretin tests. During over four months of observation the liver gradually assumed its normal size, and only a slight sub-icteric hue persisted.

### Program of 1938 French Medical Congress

This year's French Medical Congress will take place September 26-28 at Marseilles. It is the custom in all French national societies to select by vote at the preceding annual meeting certain subjects and to assign two or three members to make a critical analysis of the literature and, after adding their personal experience, to submit a report at the next congress. On the first day a report will be read on icterospirochetosis, on the second day one on hypochloremias, and on the third day one on the treatment of avitaminoses in adults. American physicians who desire further information are asked to write to Prof. Henri Roger, 66 boulevard Notre Dame, Marseilles.

A congress on renal insufficiency will be held September 22 at the health resort Evian on the French side of Lake Geneva.

### International Congress of Examiners for Insurance Companies

The International Congress of Examiners for Insurance Companies will be held May 18-20, 1939, at Paris. The honorary presidents are Dr. P. Hornig of Berlin and Sir Walter Langdon-Brown of London. The president is Prof. M. Loeper of Paris. Papers will be read on the influence of pulmonary

tuberculosis, hyperthyroidism, obesity, tobacco and albuminuria on life expectancy. A series of papers will also be read on the value of vital statistics in life insurance. Dr. Wireman Cook of Minneapolis will take part in the last-named symposium. Inquiries regarding the congress can be sent to Dr. P. A. Carrier, 8 rue de Belloy, Paris, 16\*.

### BERLIN

(From Our Regular Correspondent)

July 7, 1938.

#### The Campaign Against Epidemic Poliomyelitis

Dr. Ernst Meier of the National Health Bureau has had published a report on epidemic poliomyelitis in the German reich. The morbidity of the disease in Germany has always remained within moderate bounds. This circumstance is explicable on various grounds: widespread immunity granted by unrecognized infections, high incidence of abortive forms, and so on. The tendency of the statistical figures for poliomyelitis to remain rather low is based on the following circumstance: Since the disease in epidemic form usually is confined to a geographically circumscribed area, the morbidity for a very large area such as Germany tends to remain moderate, in contrast to the frequently high local rates; in smaller countries, on the other hand, epidemics of the same magnitude can send the national morbidity soaring. Besides, in certain parts of the world, in Sweden, for example, and in northern sections of the United States, a special and inexplicable danger from poliomyelitis is present. Recently a high incidence of the disease has been manifested in Germany. The two years which witnessed the most serious outbreaks of poliomyelitis since the war were 1927, with 2,840 cases, and 1932, with 3,869 cases. After a notable recession in 1933, the number of cases has again risen, as the accompanying table shows. The figures do not necessarily signify a permanent tendency to increase; during the five years following the 1927 epidemic a similar upward trend was observable.

The morbidity of epidemic poliomyelitis for the German reich in 1937 was 4 per hundred thousand of population; the highest national morbidity recorded in recent years was 6, in 1932. Still greater are the differences in morbidity as between

#### Epidemic Poliomyelitis in Germany

Year	Cases
1933.....	1,251
1934.....	1,699
1935.....	2,080
1936.....	2,256
1937.....	2,723

various countries. For example, in 1936 the morbidity per hundred thousand of population was 1.4 for England and Wales, 3.4 for the German reich and 49 for Sweden. How significant the geographic delimitation of epidemics may be for such figures is exemplified by the fact that whereas in upper Bavaria in 1937 the morbidity was 41.3 (still per hundred thousand of population), that of the entire reich in the same year was, as mentioned, only 4. These local variations, as numerous examples attest, play an important part in the statistics of poliomyelitis, and if the statistics are incomplete false conclusions are easily arrived at.

An exact analysis shows that in 1936 a certain displacement in the morbidity took place in the direction of the higher age group and that this trend continued during 1937. In Berlin and Munich more cases were reported among older female groups than among older male groups.

The inauguration of special measures on the part of the federal health authorities is justified by the severe sequels of poliomyelitis, although the disease in its most severe form is not frequent. Observations made in Germany in recent years

permit one to estimate roughly that, of one million children born in a certain year, 2,000 are effected with poliomyelitis in the course of their youth. Of these, 600 recover completely, 1,200 remain crippled and 200 die of the disease. Hopes for successful therapy of poliomyelitis have in recent years been centered in convalescent serum, which was first extensively administered in Germany in 1932 and which subsequently has come to be generally utilized. Although successful results were not always observed after use of this serum, this therapeutic method enjoys a high reputation in Germany. On the one hand, favorable-sounding results are reported but, on the other hand, there is no truly successful therapeutic method. The distribution of serum necessitated the formation of a special type of organization, which has now been functioning efficiently for several years. On account of the surprisingly high

#### Convalescent Blood Received at Behring Laboratories

Year	Liters of Blood
1934.....	70
1935.....	150
1936.....	90
1937.....	166

local incidence of the disease, central assembly of the serum has been found expedient. Nationwide distribution is centered in the National Health Bureau, which sedulously observes the course of an epidemic (by following current medical reports) and plans the necessary measures to be taken. The available supplies of serum are always carefully regulated. In general the abstraction of blood takes place from May forward; namely, a short while before the period of seasonal epidemics. All organizational difficulties have been solved, and the cooperation of health officials everywhere is assured. A special campaign of propaganda to augment the ranks of suitable blood donors has been initiated. In all Germany only two establishments engage in preparation of the serum: the Behring Laboratories, Marburg, supply the entire reich excepting Saxony, and Saxon Serologic Laboratories, Dresden, supply that province. The quantities of convalescent blood received at the Behring Laboratories in recent years are listed in the accompanying table. The figures for 1935 and 1937 are higher, as concerted campaigns for the assembly of convalescent blood took place in each of those years. Furthermore, a special method of prompt reporting has been instituted in order that foci of infection may be isolated.

Of further interest is the author's investigation of the time required for recognition of poliomyelitis. A study of 600 cases disclosed that the elapsed time between the onset of the illness and the beginning of treatment was more than one week in 14.3 per cent, that treatment was begun on the very day the patient became ill in only 17.7 per cent and that about half (50.9 per cent) of the patients first received medical attention within two days after the onset of illness. For the prognostic evaluation of convalescent serum it is important to realize that in about half the cases the physician did not see the patient before the fourth day of illness. A factor that makes for this delay, in addition to difficulties of transportation in certain regions, is the vagueness of the initial symptoms, which often causes the parents of a stricken child to put off seeking the physician. Throughout the German reich cases of epidemic poliomyelitis must be reported to the health authorities by the attending physician. In 14.6 per cent of the 600 cases the report was made on the first day of treatment; in 13.8 per cent it was not made for more than a week after treatment was begun, and in the vast majority of cases (52.7 per cent) it was made on the second day of treatment. The late reports may be considered as due chiefly to the main difficulties of diagnosis. During epidemics cases tend to be reported at an earlier stage, as is readily understandable.

### Prof. Hermann Straub Is Dead

Prof. Hermann Straub, Göttingen ordinarius of internal medicine, died suddenly at the age of 55 while on a professional journey. Straub was a pupil principally of Professor von Romberg; in addition he received excellent training in physiology and pharmacology at Freiburg, Cambridge and London. After serving for many years as senior physician of the First Medical Clinic, Munich, he was called to Halle, at the age of 36. Subsequently he served at Greifswald and for the past decade had been at Göttingen. Straub was one of the foremost authorities on diseases of the circulation, a field to which his minutely elaborated clinical and experimental work contributed much. Among his publications may be mentioned those on the determination of blood pressure, on examinations of the dynamics of pulsation, on velocity of the blood current and cardiac beat volume, and on determination of pressure in the different cavities of the heart. His factual exactitude earned him a great reputation.

### BUCHAREST

(From Our Regular Correspondent)

June 25, 1938.

#### Syphilis in Rumania

Dr. G. Banu, formerly minister of health in Rumania, made extensive investigations of syphilis in Rumania. In the province of Transylvania syphilis has a long history. Krauss found syphilitic patients in Brasov in 1500. About the end of the eighteenth century there were epidemics of syphilis. The frequent wars during the rule of the Hapsburgs and the movements of troops were responsible for the general high incidence of syphilis in the Banat. It is recorded that at the end of the eighteenth century Maria Theresa removed all prostitutes from Vienna and settled them in the environment of Timisoara, in places where the majority of the population were Rumanians. By this measure syphilis was spread to such an extent that hospitals had to be erected for the treatment of this one disease in Comoraste village, Lugoj, Faget and Caransebes.

The first records of syphilis in the Rumanian principalities go back to the seventeenth century, when prostitution was extensive in Bucharest. As contact was made with the neighboring states, syphilis spread, chiefly imported by the rich land-owners who used to go abroad. At the commencement of the nineteenth century a new focus of infection was formed by the Russian army. In 1835 syphilis claimed many lives in Bucharest, Arges and Teleormana. The administrative board of Muntenia passed the following resolution Aug. 21, 1843: "Since venereal disease has come to our country, all public women should be secretly conscribed, and at a certain place on a certain day in a certain hour they shall be collected and examined; those found sick are to be sent to the hospital." In 1844 the Coltea and Pantelimon hospitals had 227 women patients suffering from venereal diseases. In Moldavia systematic control of the prostitutes was introduced in 1844. They were registered by the police and given a booklet in which weekly medical examinations were recorded, and those found sick were sent to the hospital. In Bucharest a similar regulation was introduced in 1862. Legislation dealt with the problem of syphilis in 1874, 1886 and 1898.

Of conditions prevailing about the end of the past century Professor Felix writes: "In the last decades of the nineteenth century the lowered morals, the increase in the number of bachelors, the ever growing luxury, the introduction of compulsory military service and the excessive formalities demanded by notary publics with a decrease in the number of marriages all promoted the spread of venereal diseases." In 1898 and 1899 the total number of syphilitic patients treated in all hospitals of the country was about 10,000 yearly, while in the outpatient departments of hospitals the attendance amounted to 28,000. According to the data supplied by Bordea there were 9,563

syphilitic persons in 1901, 9,595 in 1905 and 11,651 in 1915. The number increased from 1918 on, which can be attributed chiefly to the enlargement of the country's territory by the addition of Transylvania, Bessarabia and the Banat. There were 14,067 patients on record in 1918, 22,485 in 1919 and 30,509 in 1920. The increasing number is due not so much to the spread of the disease as to intense activity in the finding of cases. These figures do not include all syphilitic persons in the country, for many patients seek relief from private physicians. As to the capital city itself, 2,605 patients were attended in Bucharest in 1910, 3,530 in 1915, 3,632 in 1918 and 2,738 in 1920. These figures also do not show the true conditions. For instance, in the Eufforia Hospital, where free outpatient service is given, in one year there was a turnover of 13,942 patients with venereal disease, and among these were many with syphilis.

Conditions in Transylvania are reflected by the statistics compiled by the antivenereal disease dispensaries, according to which 1,307 syphilitic patients received treatment in 1919 and 2,111 in 1920. In Transylvanian hospitals 6,188 syphilitic patients were under medical care in 1919 and 8,818 in 1920.

The World War was a large factor in the spread of syphilis. In both territories of Rumania, that which was occupied by the enemy and Moldavia, which was overrun by the Russians, the number of persons with syphilis increased. The spread of syphilis was promoted much more by the Russian than by the Austro-Hungarian or the German army.

A report states that in 1928 there were 146,707 persons with syphilis, of whom 89,691 were subjected to treatment; that is, 61 per cent. The number of doses of neoarsphenamine used that year in free dispensaries was 651,982. The morbidity per hundred thousand of population was 843.5. The percentages of the forms of syphilis were as follows: primary 10.7, secondary 34.4, tertiary 13.3, latent 29.6, parasyphilis 2.9 and heredo-syphilis 9.1 per cent. The mortality rate per thousand patients was 9. It is distressing that according to these statistics a great number of patients receive no treatment.

With reference to the sexes, the infected males represented 47.2 per cent and the women 52.8 per cent. The most infected province is the old kingdom, the rate being 1,097 per hundred thousand of population; then follow Bucovina, Bessarabia and Transylvania. This state of affairs in the old kingdom is due to cultural, social and political conditions and invasion during the war. In Bucovina the reported number of syphilitic persons is higher than in Bessarabia, because in Bucovina the case-finding campaign was carried on with much greater energy.

It is causing great anxiety that 10.7 of 100 syphilitic persons suffer from primary and 34.4 from secondary syphilis, as almost half of the syphilitic population is in the infectious stage. The social peril in this situation worries the leaders of public health, who will endeavor to stop the spread of infection by strict control, compulsory notification, forced treatment and lectures to the public.

#### The Care of Mothers and Children

The ministry of health intends to erect a school of midwifery in every great urban center to make possible the ideal that every village shall have its own midwife. In the schools of midwifery pupils will be admitted only from the surrounding country and after studying for one year they will be given the right to practice midwifery, but only in villages. The midwife will not get a fixed salary from the village but will be paid by the state according to how many births she attends. In this way it will be to her interest that the number of births in the village shall be as many as possible and so she will refuse to help gravid women get rid of their burden.

Experience in the field of child welfare has shown that the high infant mortality in the rural districts is attributable first to lack of knowledge necessary to the nursing of children under 1 year of age. The ministry of health contemplates

establishing many more village dispensaries, provided with matrons, whose chief duty will be the elimination of some bad customs existing in some villages and the changing of the nursing and care of infants in the right direction.

### ITALY

(From Our Regular Correspondent)

June 30, 1938.

#### Meeting of Urologists

When the Società di Urologia recently met at Naples, Professor Cacchi of Padua reported studies performed on thirty-three strains of tubercle bacilli which were isolated from the urine in cases of human renal tuberculosis. The identification was made by the cultural properties of the several strains on elective culture mediums, such as Petragani's, with 3 per cent glycerin. The biologic test was also made. In three of the thirty-three cases the isolated strain presented the characteristics of the bovine type. The speaker discussed the symptoms and the evolution of the condition in these three cases, all of which were grave and two of which were rapidly fatal.

Dr. Bravetta of Milan called attention to the canalization of urinary calculi which are situated along the secretory route of the kidney. Dr. Di Maio of Milan, who from 1932 has studied the pathologic conditions which develop in workers who handle amines, reported his observations in 1937. There was a case of malignant tumor of the bladder, one of primary benign papilloma, two recurrences of benign multiple papilloma and fifteen cases of preancerous congestion.

Dr. Garofalo of Bologna spoke on a sign of cancer of the prostate. In the last two years he has observed nineteen cases of neoplasm of the prostate in patients ranging in age from 50 to 80 years. The diagnosis was confirmed in seven cases by microscopic study and in the other twelve by the clinical evolution of the condition. In 50 per cent of the cases the deferent canals were uniformly dilated to the caliber of a No. 15 Charrière sound. The other parts of the structure were normal. The sign of the deferent canal is frequent in young patients suffering from solid carcinoma of the prostate. It does not show when the condition is adenocarcinoma or the patient is over 70. According to Dr. Garofalo the changes of the deferent canal are due to hypertrophy of the muscular layers of the canal from effort during passage of the spermatic current through the ejaculatory ducts which are compressed by the tumor. The sign is of clinical importance.

Dr. Pellecchia stated that the development of adenoma depends on the presence of organic and humoral modifications related to the age of the patient. The endocrine theory is not enough to explain the formation of adenoma. The speaker said that endocrine hyperfunction from old age and the diminution of sexual functions may be the factor for the production of adenoma. He reported satisfactory results from the administration of sex endocrine products. In cases of acute retention of urine the glandular treatment induced voluntary micturition. In all cases the treatment is harmless. Dr. Oberholtzer reported his results from a treatment with synthetic testis hormones or with testicular extracts in a group of fifty patients suffering from prostatism. The subjective symptoms improved in all cases. In cases of chronic retention of the urine, reduction or complete disappearance of the residue took place. In several cases of complete retention the treatment induced voluntary micturition. The speaker said that the treatment with testis hormones has to be administered as soon as the disorders of micturition appear.

#### International Congress of Criminology

The first International Congress of the Society of Criminology will meet at Rome late in September. The following topics of discussion appear on the agenda: Etiology and Diagnosis of Juvenile Criminality; Data on Certain Legal Procedures; Per-

sonality Study of the Delinquent; Role of the Judge in the Anticrime Campaign; His Criminologic Training; Organization for Prevention of Crime in Various Countries; Ethnology and Criminology; Practical Application of Public Safety Measures in Various Countries.

#### Obligatory Insurance Against Tuberculosis

The Council of Ministers recently passed a law by which insurance against tuberculosis is obligatory to all school teachers and didactic directors who make a monthly salary of more than 800 lire (\$40). Sons, brothers and sisters under the age of 21 who are supported by the insured person will receive the benefits of the insurance. The money necessary for expenses will be collected by means of an annual tax of 36 lire for each insured person.

#### Professor Di Vestea is Dead

Prof. Alfonso Di Vestea, who for thirty-eight years occupied the chair of hygiene at the University of Pisa, died at Rome. Among the best known and most important of his accomplishments were his studies of the virus of rabies and its filtrability, the climatotherapy of tuberculosis, the methods of microscopic examination of different types of flour and, in addition, much experimental work in the most diversified fields of hygiene and of microbiology. Di Vestea founded the first antirabies institute in Italy, at the medical clinic of Naples. He was author of a manual of school hygiene that has become classic. He was also a propagandist of child welfare, particularly with regard to the organization of open air colonies for children in the mountains and at the seashore.

## Marriages

WENDEL HOLMES COOK, Philadelphia, Miss., to Miss Jane Elizabeth Peneguy in New Orleans, June 26.

JAMES NEWBURN BURCH, Shelbyville, Tenn., to Miss Sara McQuiddy Cortner at Bell Buckle, May 28.

HARRY CARRINGTON FLEMING, New York, to Miss Evelyn Brooks in Charlottesville, Va., July 2.

LUCILLE MARY BOND, Toronto, Ont., Canada, to Mr. Albert Henry Kraft of New York, June 27.

LESLIE HOMER BACKUS, Gloversville, N. Y., to Miss Helen Torrey Grant in Northville, July 2.

LOUIS PHILIP BAILEY, Nathalie, Va., to Miss Telia Barner Barksdale in Sutherland, June 18.

JOHN BARTON BURRETT, New York, to Miss Clara Theodora Bray of Orlando, Fla., July 2.

KENNETH H. BROWN, Indianapolis, to Miss Rosamond Hoagland of Decatur, Ill., July 1.

VERNON DUANE THYSELL, Hawley, Minn., to Miss Nanette Abt of Minneapolis in June.

BRADFORD CANNON, St. Louis, to Miss Ellen DeNormandie of Lincoln, Mass., recently.

WILLIAM J. BAILEY to Mrs. Lucille H. Durden, both of Fort Lauderdale, Fla., June 16.

JOHN WILLIAM BALLOU, Rushville, Ill., to Miss Marijane Corya in Denver, July 9.

ALBERT HENRY ANDREWS JR., Chicago, to Miss Jane Olson of Oak Park, Ill., June 25.

CHARLES M. CLENDENEN to Miss Helen Boucher, both of Damascus, Va., in June.

ALMON R. CROSS, Durham, N. C., to Miss Doris Ellen Brown of Goldsboro, June 5.

MARK P. VIRNIC, Wells, Minn., to Miss Genevieve Kelly of Minneapolis, June 20.

JOHN CANNON, New York, to Miss Jean Carter of Huntington, N. Y., June 25.

EARL WILLIAM ELLIS, Elgin, Minn., to Miss Marvel Wagner of Shafer, recently.

WILLARD MANVILLE AKINS, Eveleth, Minn., to Miss Lila Koivisto, recently.

CLIFFORD HERBERT BRUSH to Miss Mary Moffitt, both of Chicago, June 25.



## Deaths

**Frederick Peterson** • Bridgewater, Conn.; University of Buffalo School of Medicine, 1880; chairman of the Section on Neurology and Medical Jurisprudence, American Medical Association, 1898-1899; professor of pathology at his alma mater, 1882-1884; professor of nervous and mental diseases, University of Vermont, 1888-1889; professor of psychiatry, Columbia University College of Physicians and Surgeons, 1903-1915; member and past president of the American Neurological Association; member of the American Psychiatric Association, Association for Research in Nervous and Mental Diseases and the American Psychopathological Association; president of the New York State Commission in Lunacy, 1901-1904, and the New York Neurological Society, 1899-1901; since 1894 member of the board of managers, Craig Colony, Sonoma, N. Y., and at one time president; at various times alienist to Bellevue Hospital, and to the Manhattan, Flatbush, and Central Islip State hospitals; co-editor of a two volume work, "Legal Medicine and Toxicology" and "Atlas of Legal Medicine," translated from the German; co-author of nine editions of "Nervous and Mental Diseases"; contributed numerous articles to various magazines; received honorary degrees from University of Niagara in 1888 and the University of Pennsylvania in 1919; aged 79; died, July 9, in New York of diabetes mellitus.

**Homer Gage** • Worcester, Mass.; Harvard University Medical School, Boston, 1887; member of the American Surgical Association; past president of the New England Surgical Society; fellow of the American College of Surgeons; served during the World War; for many years medical director of the State Mutual Life Assurance Company; past president of the Association of Life Insurance Medical Directors of America; member of the board of overseers, Harvard University, 1921-1927, 1928-1934; trustee, Worcester Polytechnic Institute, 1907-1938, and treasurer, 1908-1938; on the consulting staff of the Worcester City Hospital; on the consulting medical board of the Memorial Hospital and president of the board of trustees; aged 76; died, July 3, of coronary thrombosis.

**John Bromham Hawes II** • Boston; Harvard University Medical School, Boston, 1903; president of the Boston Tuberculosis Association; member of the American Clinical and Climatological Association; formerly assistant visiting physician and director of the clinic for pulmonary diseases, Massachusetts General Hospital; director of the Rutland (Mass.) Cottage Sanatoria; consultant, diseases of the lungs, U. S. Veterans' Bureau; co-author, with Dr. M. J. Stone, of "Diagnosis and Treatment of Pulmonary Tuberculosis"; author of "Early Pulmonary Tuberculosis," "Tuberculosis and the Community," and others, and of numerous monographs on pulmonary diseases; aged 61; died, July 20, of coronary occlusion.

**Henry Valentine Broeser** • Hoboken, N. J.; New York Homeopathic Medical College, 1900; member of the Radiological Society of North America; member of the county board of health; served during the World War; on the staffs of St. Mary's Hospital, Hoboken, St. Francis Hospital, Jersey City, and the North Hudson Hospital, Weehawken; aged 69; died, June 29, of arteriosclerosis and acute cardiac dilatation.

**Samuel Frank Abrams** • St. Louis; Washington University School of Medicine, St. Louis, 1917; member of the Central Association of Obstetricians and Gynecologists; fellow of the American College of Surgeons; aged 46; visiting gynecologist to St. Louis City Hospital and associate gynecologist and obstetrician to the Jewish Hospital, where he died, June 26, of thrombosis.

**George Bertram Booth**, Los Angeles; Toledo Medical College, 1907; member of the Ohio State Medical Association; fellow of the American College of Surgeons; served during the World War; formerly surgeon to the Mercy Hospital and on the advisory staff of the Lucas County Hospital, Toledo; aged 57; died, June 8, in the Veterans Administration Facility, West Los Angeles.

**Leon Emile Duval**, Ionia, Mich.; University of Vermont College of Medicine, Burlington, 1915; member of the Michigan State Medical Society and the American Psychiatric Association; assistant superintendent of the Ionia State Hospital; aged 46; died, June 17, of burns received when he poured gasoline over his automobile and clothing and set them on fire.

**Victor Dryden Holloway** • Knoxville, Tenn.; University of Pennsylvania Department of Medicine, Philadelphia, 1907; member of the Southeastern Surgical Congress; fellow of the American College of Surgeons; surgeon to Fort Sanders and St. Mary's Memorial hospitals; gynecologist to the Knoxville General Hospital; aged 53; died, June 24, of leukemia.

**Samuel Griggs Jett**, Reidsville, N. C.; University of the South Medical Department, Sewanee, Tenn., 1903; member of the Medical Society of the State of North Carolina; health officer; formerly county coroner; member of the local school board; aged 57; died, June 11, in the Memorial Hospital, Danville, Va., of coronary thrombosis.

**Levi S. Walton**, Jenkintown, Pa.; Jefferson Medical College of Philadelphia, 1885; member of the Medical Society of the State of Pennsylvania; past president of the Bucks County Medical Society; formerly a member of the U. S. Board of Pension Examiners; aged 75; died, June 8, of coronary thrombosis.

**Susan Jones**, Racine, Wis.; Rush Medical College, Chicago, 1903; member of the State Medical Society of Wisconsin; past president and secretary of the Racine County Medical Society; aged 75; died, June 17, in St. Mary's Hospital, of coronary thrombosis, diabetes mellitus and arteriosclerosis.

**Samuel Chester Eveleth** • Marblehead, Mass.; Harvard University Medical School, Boston, 1908; chairman of the school board; on the staff of the Mary A. Alley Emergency Hospital; aged 55; died, June 13, of coronary thrombosis, cerebral hemorrhage, pneumonia and empyema.

**Waheeb Salem Zarick**, Indianapolis; Indiana University School of Medicine, Indianapolis, 1927; member of the Indiana State Medical Association; assistant professor of anatomy, Indiana University School of Dentistry; public schools physician; aged 46; died, June 28.

**Matt S. Dibrell**, Van Buren, Ark.; Arkansas Industrial University Medical Department, Little Rock, 1889; member of the Arkansas Medical Society; past president of the Crawford County Medical Society; aged 71; died, June 1, of hypertension and heart disease.

**Myron Joseph Fox**, Waterbury, Conn.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1928; member of the Connecticut State Medical Society; aged 38; died, June 28, in the Massachusetts General Hospital, Boston, of heart disease.

**Edward Everett Green** • New York; Long Island College Hospital, Brooklyn, 1906; served during the World War; on the staff of the Swedish Hospital; aged 69; died, June 30, in the Brooklyn Hospital of arteriosclerosis and coronary occlusion.

**John William Pinkert**, Louisville, Ky.; Southwestern Homeopathic Medical College and Hospital, Louisville, 1896; formerly associate professor of anatomy at his alma mater; aged 73; died, May 3, of carcinoma of the stomach and liver.

**Harry William Vickers** • Little Falls, N. Y.; Cornell University Medical College, New York, 1903; served during the World War; on the staff of the Little Falls Hospital; aged 61; died, June 11, of carcinoma of the kidney with metastasis.

**Frank Fred Hoffmann** • Chicago; Bennett College of Eclectic Medicine and Surgery, Chicago, 1901; on the staffs of the Illinois Masonic Hospital and the Norwegian-American Hospital; aged 59; died, June 22, of coronary occlusion.

**Kenneth Beymer Turner**, Los Angeles; Columbian University Medical Department, Washington, D. C., 1902; aged 62; died, May 27, in the Veterans Administration Facility of cirrhosis of the liver and arteriosclerotic heart disease.

**Walter Duke Ellis**, Plano, Texas; Vanderbilt University School of Medicine, Nashville, Tenn., 1894; member of the State Medical Association of Texas; aged 69; died, June 14, in the Baylor Hospital, Dallas, of cirrhosis of the liver.

**Albert Field Groves**, Daytona Beach, Fla.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1879; aged 84; died, June 22, in the Halifax District Hospital of myocarditis and nephritis.

**Mack Henry Tabor**, Crumpler, W. Va.; University College of Medicine, Richmond, 1910; member of the West Virginia State Medical Association; formerly member of the state legislature; aged 52; died, May 16.

**Paul Roy Jones**, Mobile, Ala.; Vanderbilt University School of Medicine, Nashville, Tenn., 1898; aged 61; died, June 14, at his home in Whistler of cirrhosis of the liver, chronic myocarditis and chronic sinusitis.

**Henry W. Schrock**, Lagrange, Ind.; Cincinnati College of Medicine and Surgery, 1881; member of the Indiana State Medical Association; aged 83; died, June 3, of influenza, pneumonia and heart disease.

**Ida Johanna Heiberger**, Washington, D. C.; Woman's Medical College of Pennsylvania, Philadelphia, 1885; aged 80; died, June 15, in St. Elizabeth's Hospital of acute left hemiplegia and arteriosclerosis.

Charles Ray Dever, Hastings, Neb.; Ensworth Medical College, St. Joseph, Mo., 1911; member of the Nebraska State Medical Association; aged 57; died, May 25, in St. Joseph, Mo., of carcinoma of the prostate.

Ryan Alfred Gyles, Blackville, S. C.; University of Maryland School of Medicine, Baltimore, 1891; formerly mayor; at one time member of the state legislature; aged 67; died, June 26, of coronary occlusion.

Henry Harbaugh Rhodes @ Middletown, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1902; member of the board of health; aged 63; died, May 24, of arteriosclerosis and cerebral hemorrhage.

Frank Scofield Skemp, Talihina, Okla.; Minneapolis College of Physicians and Surgeons, 1909; member of the Oklahoma State Medical Association; aged 54; died, June 6, in Denver, of myocarditis.

Fletcher J. Wright @ Petersburg, Va.; University College of Medicine, Richmond, 1899; member of the state board of medical examiners; on the staff of the Petersburg Hospital; aged 65; died, May 8.

Edward William Tisdale, Los Angeles; University of Louisville (Ky.) Medical Department, 1893; member of the State Medical Association of Texas; aged 75; died, May 14, of chronic myocarditis.

Arthur A. Hobbs, Kansas City, Mo.; Kansas City Medical College, 1896; member of the Missouri State Medical Association; served during the World War; aged 70; died, June 7, in St. Joseph Hospital.

John Caldwell Decker, Portola, Calif.; Cooper Medical College, San Francisco, 1904; formerly county health officer; served during the World War; aged 61; died, May 13, of coronary occlusion.

William Edward O'Connor, Omaha; Creighton University School of Medicine, Omaha, 1936; aged 27; resident at Henry Ford Hospital, Detroit, where he died, June 7, of a self-inflicted bullet wound.

Charles Morlan Hole @ Cleveland Heights, Ohio; Western Reserve University Medical Department, Cleveland, 1898; aged 69; died, June 16, in a hospital at Cleveland of arteriosclerotic heart disease.

Frank Amasa Hodgdon, Malden, Mass.; Hahnemann Medical College and Hospital, Chicago, 1886; aged 81; died, June 18, of complications resulting from a broken leg suffered in a fall.

Henry Lewis Hille, Collinsville, Okla.; Hospital College of Medicine, Louisville, Ky., 1904; president of the school board and formerly mayor; aged 57; died, May 31, of heart disease.

George Franklin Stack, Superior, Wis.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1896; aged 68; died, June 2, of arteriosclerosis and heart disease.

Edward Clinton Davis, Milwaukee; Bennett College of Eclectic Medicine and Surgery, Chicago, 1914; aged 48; died, June 16, of coronary sclerosis and carcinoma of the rectum.

Theodore Young Hull @ San Antonio, Texas; Columbian University Medical Department, Washington, D. C., 1892; aged 77; died, June 30, of hemorrhage into the pons-oblongata.

Flora Pollack, Baltimore; Woman's Medical College of Baltimore, 1891; member of the Medical and Surgical Faculty of Maryland; aged 72; died, May 27, of mitral stenosis.

Gardiner Spring Jr., Salisbury, Md.; Medical College of Virginia, Richmond, 1913; aged 47; died, June 28, in the Johns Hopkins Hospital, Baltimore, of tuberculosis of the lungs.

Peter Charles Schenkelberger @ Chicago; Hahnemann Medical College and Hospital, Chicago, 1903; aged 59; was killed, June 26, when he fell from a nine story window.

Eugene J. Bittman, Los Angeles; Washington University School of Medicine, St. Louis, 1897; aged 64; died, May 21, in the California Hospital of acute coronary thrombosis.

Frank Edward Mahoney, New Stanton, Pa.; University of Pittsburgh School of Medicine, 1932; aged 30; died, May 10, in the University Hospital, Philadelphia, of leukemia.

Marshall Dayton Hamner, Hannibal, Mo.; University of the City of New York Medical Department, 1877; aged 82; died, June 8, in the Levering Hospital of prostatitis.

John B. Booz, Pittsburgh; University of Pittsburgh School of Medicine, 1908; member of the Medical Society of the State of Pennsylvania; aged 57; was drowned, June 1.

Charles C. Van Valkenburgh, Fresno, Calif.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1878; aged 88; died, May 12, of arteriosclerosis.

Wilfred Everett Bixby, Sebastopol, Calif.; University of California Medical Department, San Francisco, 1907; aged 55; died, June 29, of a self-inflicted bullet wound.

Joseph Peters Hershberger, Lancaster, Ohio; Hahnemann Medical College of Philadelphia, 1881; aged 82; died, June 11, of cerebral hemorrhage and arteriosclerosis.

Charles Morris Simpson, Cleveland; Beaumont Hospital Medical College, St. Louis, 1890; aged 78; died, June 7, in the Fairview Hospital of coronary thrombosis.

Frederick Barber Meek, Oklahoma City; Western University Faculty of Medicine, London, Ont., Canada, 1901; aged 65; died, June 22, of coronary thrombosis.

John Joseph Wenzke, Celina, Ohio; Ohio State University College of Medicine, Columbus, 1929; aged 35; died, May 31, in Howard, Pa., of pulmonary tuberculosis.

Joab Langston Thomas, Bessemer, Ala.; Tulane University of Louisiana School of Medicine, New Orleans, 1921; aged 45; died suddenly, June 8, of angina pectoris.

Kenneth W. Sneed @ Wortham, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1892; aged 68; died, June 26, of cerebral hemorrhage.

Sumner Bradbury Marshall, Alfred, Maine; Medical School of Maine, Portland, 1898; aged 67; died, June 1, in a hospital at Sanford, of pneumonia.

Samuel Smith, Boston; St. Louis College of Physicians and Surgeons, 1924; member of the Massachusetts Medical Society; aged 45; hanged himself, June 20.

Carl Walmer Moffitt, Rockland, Maine; Hahnemann Medical College and Hospital of Philadelphia, 1894; aged 69; died, May 25, of chronic myocarditis.

Charles Card Selden, Oberlin, Ohio; Long Island College Hospital, Brooklyn, 1895; aged 77; died, June 15, of arteriosclerosis and coronary thrombosis.

Greenbery Kates Talley, Tyler, Texas; Louisville (Ky.) Medical College, 1890; Missouri Medical College, St. Louis, 1894; aged 79; died, April 19.

Andrew Jefferson Hoover, Wynne Wood, Okla.; Jefferson Medical College of Philadelphia, 1887; aged 77; died, June 22, of cerebral hemorrhage.

James William Aitchison, Madrid, N. Y.; New York University Medical College, 1896; for many years health officer; aged 75; died, May 11.

William Edmond Anderson, Lake Alma, Sask., Canada; Queen's University Faculty of Medicine, Kingston, Ont., 1910; aged 67; died, May 13.

James Harlan Wells, Shell Rock, Iowa; State University of Iowa College of Medicine, Iowa City, 1902; aged 80; died, May 27, of atheroma.

Sarah Hughes Graves Cornell, San Francisco; Cooper Medical College, San Francisco, 1892; aged 75; died, May 13, of coronary sclerosis.

James R. Autrey, Columbus, Ark.; Louisville (Ky.) Medical College, 1889; member of the Arkansas Medical Society; aged 79; died, June 17.

George Elbert Hall, Alamo, Calif.; California Eclectic Medical College, Los Angeles, 1898; aged 65; died, May 3, of diabetes mellitus.

Asa Vernon Snow, Cushman, Mass.; Bellevue Hospital Medical College, New York, 1879; aged 80; died, June 8, of heart disease.

Alton Jeffries, Detroit; Michigan College of Medicine and Surgery, Detroit, 1891; aged 80; died, June 18, of coronary thrombosis.

Cassius M. Craig, Champaign, Ill.; Medical College of Ohio, Cincinnati, 1882; aged 81; died, June 25, of bronchopneumonia.

Thomas Sylvester Kirby, Cartier, Ont., Canada; University of Toronto Faculty of Medicine, 1910; aged 53; died, May 3.

Robert Edward Ellzey, Cotton Valley, La.; Memphis (Tenn.) Hospital Medical College, 1913; aged 56; died, June 12.

Archibald Le Roy Rice, Los Angeles; Denver College of Medicine, 1902; aged 65; died in May of cerebral embolus.

Archibald C. Byars, Oakland, Calif.; Tennessee Medical College, Knoxville, Tenn., 1902; aged 68; died, May 17.

Caleb P. Soper, Cedar Falls, Iowa; Dartmouth Medical School, Hanover, N. H., 1883; aged 76; died, May 21.

Philip E. Hannah, Harrodsburg, Ky.; Southern Medical College, Atlanta, Ga., 1886; aged 74; died, May 14.

William Bell Meredith, Pearsall, Texas; Medical College of Alabama, Mobile, 1874; aged 87; died in May.

## Correspondence

### DOCTORS ON COINS

*To the Editor:*—I am much interested in your comment on the article from the *Centour of Alpha Kappa Kappa* (THE JOURNAL, August 6, p. 536) on the portraits of medical men on postage stamps. So far as I know the numismatists have not fared as well as the philatelists. I have an Austrian two shilling piece struck in 1929 bearing the profile of Theodor Billroth. I know of no other coin bearing the portrait of a physician and would be glad to hear from interested physicians if other such coins have been issued by any country.

EDGAR F. KISER, M.D., Indianapolis.

### "CONCENTRATION OF CHLORIDE, SODIUM AND POTASSIUM IN URINE AND BLOOD"

*To the Editor:*—My attention is called to two errors in the bibliography of the paper entitled "Concentrations of Chloride, Sodium and Potassium in Urine and Blood: Their Diagnostic Significance in Adrenal Insufficiency" by Cutler, Power and myself in THE JOURNAL, July 9. The reference to Gordon, Sevringhaus and Stark should be Gordon, E. S.; Kimble M. S., and Sevringhaus, E. L.: Potassium Tolerance Tests in the Study of Asthenias, p. 31, Program of Central Society for Clinical Research, Chicago, November 1937. The reference to Zwemer and Truszkowski should be *Proc. Soc. Exper. Biol. & Med.* 35:424-426 (Dec.) 1936.

RUSSELL M. WILDER, M.D., Rochester, Minn.

### AIR CONDITIONING AND INDUSTRIAL HEALTH

*To the Editor:*—In the June 25 issue of THE JOURNAL, page 2142, Dr. Leverett D. Bristol has reported his observations under the heading of "Air Conditioning and Industrial Health." From his experience he states that "there is no evidence to indicate any improvement in incidence or duration of sickness among a group of about 1,000 people working in scientifically controlled air conditioned space as compared with a control group of approximately the same size working in non-air conditioned quarters ventilated by the usual mechanical and natural methods."

In commenting on these findings he says: "The somewhat negative results in this comparative study may be based not so much on the lack of influence of air conditioning on absence because of sickness as on the satisfactory quality of the ventilation in this particular instance available to the control, non-air conditioned group."

This is a pertinent observation, but I believe that he has overlooked another factor, and that is the fact that the workers at most were in the air conditioned environment from seven to eight hours a day probably five days out of the week. The remainder of their time undoubtedly was spent in surroundings much less desirable or healthful. For this reason I do not see how one could expect that their exposure to an air conditioned environment for forty hours a week would result in a general improvement of their health. If these people went home to an air conditioned house or apartment, one could then expect that they would be in an air conditioned environment about two thirds of the time and should show some improvement in their general health; but unfortunately one is not able to make such comparisons at this time.

I mention this because a similar report has been made by the Metropolitan Life Insurance Company, comparing the incidence of illness between their employees in their air conditioned building with those in a non-air conditioned building. These reports

are undoubtedly of value, but they should not be used as an argument against the healthful effects of air conditioning properly used. I believe that it would be important to have an industrial survey report showing the incidence of accidents in a factory before and after air conditioning. In other words, I believe that the workmen are placed at a real advantage when they are subjected to an air conditioned environment, but this cannot be expected to carry them through the remaining sixteen hours of the day any more than one could expect a dose of insulin given in the morning to take care of the carbohydrates that a diabetic patient eats for his evening meal.

ALBERT G. YOUNG, M.D., Brookline, Mass.  
Medical Director, Corey Hill Hospital.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### RECURRENT SMALLPOX AND SMALLPOX AFTER VACCINATION

*To the Editor:*—Is it possible for a person who has been vaccinated and whose vaccination has taken to have smallpox one year later? Also is it possible for one who has had smallpox once to have it again? In a controversy that is waging, I maintain that neither is possible, but I should like authority to support me.

H. R. RASOR, M.D., Mancos, Colo.

ANSWER.—In this answer the statements in the question are taken at their face value. In the absence of all details with regard to the kind of vaccine used, the nature of the take and the symptoms of the attack of smallpox, only general answers to the questions can be given.

Immunity is always relative. Vaccination with typical take practically always protects against smallpox much longer than one year, but at the beginning of the second year after vaccination a gradual loss of immunity begins. It is possible that in very exceptional cases smallpox may develop in a person vaccinated with a take a year previously. Cases of that kind have been observed. Even smallpox itself does not always protect against smallpox. Two or even three attacks of smallpox may occur in the same person. In fact, varioloid is the name of a modified form of smallpox in a patient who has had a previous attack or has been vaccinated. Jenner mentioned an instance of five attacks of smallpox in the same person.

### CHOCOLATE CYSTS OF OVARIES

*To the Editor:*—A patient aged 24 has had a bilateral oophorectomy for bilateral chocolate cysts of the ovaries. No implantations were noted at the time of the operation. The cysts had not ruptured and there were only moderate adhesions in the culdesac. How soon would any implantations disappear postoperatively if ovarian extract is not given? When is the proper time to start glandular therapy? What type of endocrine therapy and how much should be used in such a case?

M.D., Illinois.

ANSWER.—Chocolate cysts of the ovaries were a gynecologic mystery until the epochal work of Dr. John A. Sampson, reported by him before the American Gynecological Society in May 1921. He stated the belief that the endometrial tissue is implanted in the ovary as a result of back flow of menstrual fluid, with its particles of desquamated uterine mucosa, through the tubal ostia. This endometrial debris enters the ovary through the ruptured follicle. (This idea discards the older theory of embryonic inclusion of müllerian epithelium in the ovaries.)

Another theory for the presence of this endometrial tissue in the ovaries is through the venous circulation, which would constitute a metastasis. Against this theory is the fact that metastasis of endometriomas from pelvic implants of similar tissue do not occur.

This implanted endometrial tissue under the influence of estrogenic stimulation is subject to the cyclic changes characteristic for normally placed endometrium in the uterus, with resultant accumulation of endometrial debris, hemorrhage and cyst formation containing dark, tarry, chocolate appearing material. These cysts may rupture into the pelvic cavity with

resultant implants, forming dense adhesions containing endometrial adenomas. The belief is current that implants from chocolate cysts are more invasive than those of uterine origin but are not malignant.

In the patient in question the cysts had not ruptured, but there were moderate adhesions in the culdesac indicating that these were implants from an undiscovered ruptured cyst or from menstrual debris escaping from the tubes.

With removal of the ovaries, these endometrial implants should atrophy in the same manner in which the uterine endometrium will atrophy following castration. This is the result of removal of estrogenic and luteal stimulation, inherent to the ovary. That these endometrial implants will atrophy beyond the stage of quiescence is doubtful. It is reasonable to believe that estrogenic treatment will reactivate the atrophied implants that remain.

Werner and his associates have shown that, in castrate girls, 5,000 international units (approximately 1,000 rat units) of theelin in oil given as a total dosage over a period of one month will stimulate endometrial growth, with resultant bleeding following its discontinuance (Werner, A. A.; Jones, Grey; Roberts, John; Broun, G. O.; Neilson, C. H., and Rothermich, N. O.: *Effective Clinical Dosages of Theelin in Oil*, *THE JOURNAL*, Sept. 25, 1937, p. 1027).

If one is not sure that the pelvic cavity is entirely clear of these implants, it is questionable whether the patient should have estrogenic therapy. Should the patient suffer considerably from menopausal symptoms the only other treatment that could be suggested would be to give the patient sedatives, such as chloral hydrate 0.16 Gm. (2½ grains) three times a day or elixir of phenobarbital 4 cc. (1 drachm) three or four times a day or any other desirable sedative. This of course should be discontinued as soon as possible.

It is well to determine the activity of the patient's thyroid; if its activity is low, desiccated thyroid may be added to the treatment.

#### ALLERGIC RHINITIS IN FARM BOY

*To the Editor:*—A boy aged 2½ years has had rhinitis since he was 9 months old. He is the only child of healthy parents. His mother and a maternal uncle have hay fever. There is no history of allergy on the father's side. The child seemed to have colic on a diluted whole milk formula, but he did nicely when the formula was changed to evaporated milk. He had a mild facial eczema when 3 months old. All the usual foods were added to his diet gradually without any evidence of allergy being manifest. His nutritional status has been good until this winter, when almost constant rhinitis resulted in a decreased appetite. The rhinitis becomes definitely worse following exposure to horses or chickens. He has had several asthmatic attacks, which were preceded by intimate contact with horses or articles which had been in contact with horses. Scratch tests are positive to milk, chicken feathers, duck feathers, goose feathers, dog hair, cat hair and horse dander, and also to kapok. Digital examination reveals an adenoid which is not significantly enlarged. The nasal mucosa is pale and boggy. The family lives on a farm within 50 yards of the barns. The house is of modern construction and it is heated by a hot air furnace which draws the air to be heated from return vents in the floors of the rooms. The child's room has been made as dust proof as possible. He uses no pillow and his mattress has been encased in a rubberized cloth, even though it is of a good quality felt construction. His toys have been carefully selected to avoid allergens. There is an incubator in the cellar. It has been noted that the rhinitis is worse following a hatch of chicks. The living-room furniture has down cushions. Soon after entering the living-room he had attacks of sneezing. He has been barred from the cellar and the living-room. Will you kindly advise me as to the treatment I can pursue to make him more comfortable? The parents are able to have the boy removed from the farm for one month, but for economic reasons they cannot afford a longer period. Should I undertake desensitization during that month? What allergens should I use and what procedure should I follow?

NELSON NEWMARK, M.D., Springfield, Mass.

*ANSWER:*—It is assumed from the excellent history given that the child has been examined for sensitivity to all the other foods he eats (eggs, wheat, corn, oats, meats, vegetables, fruits) and to the other common inhalants (wool, goat hair, cow hair, cottonseed) with negative results. Frequently, in the presence of perennial rather than seasonal symptoms, one may overlook the importance of pollens as a cause of trouble. This may be important especially for those living on a farm where pollens (especially those of the grasses) are found all the year round in barns. It is assumed, however, that these causes have been considered and ruled out by the examiner. We then have a patient 2½ years old, sensitive to milk, horses, feathers and cat and dog dander, living in a most unfavorable environment, a farm house only 50 yards away from the barns. The question of milk sensitivity has been well handled by giving heated (denatured) milk. It should be noted that cream should be avoided in these patients because of its content of lactoglobulin and lactalbumin in an undenatured state. The best treatment for the inhalant sensitivity is the removal of the patient from these inhalants. This pro-

cedure is so superior to attempts at "immunization" that the question of economic difficulties should be thoroughly and carefully investigated in the light of the importance of such a step for the child's health before it is considered impossible. Such a step is much more important in infancy before the development of chronic asthma with its complications than several years hence when, in spite of economic difficulties, it may have to be taken. The removal of the child even for one year from the farm to an environment free from feathers, horse dander and the other substances, aided possibly by careful and judicious hyposensitization, is to be strongly recommended.

If such a procedure is found impossible, one should clean the house of as much of the offending environmental substances as is possible. The incubators must be moved from the house, and the basement thoroughly washed of all accumulated dust which may contain particles of feathers. No matter how careful one may be, it is hardly possible to avoid the presence of fine, microscopic feather dust in a house containing an incubator in the basement. All down furniture should be removed from the house as soon as practicable. The furniture should be either reupholstered with horsehair or moss (sterilized horsehair as prepared for upholstery is not allergenic even to horse sensitive cases) or should be replaced by simple unupholstered furniture (cane or imitation leather covered chairs).

The other inhalant and contact substances mentioned may be more readily removed from the house. Dogs and cats should be strictly interdicted. The rugs and furniture that may contain their danders should be thoroughly cleaned. The avoidance of horse dander is not easy in the situation described. Riding clothes, work clothes used in the barns, manure spread as fertilizer for a garden immediately adjacent to the house—all these and many more factors that will suggest themselves to the doctor on the scene are of vital importance and must be eliminated from the patient's environment. No one should be permitted to enter the house without at least changing his work clothes if he has been in contact with chickens or horses.

In spite of all these precautions, the wind blowing from the direction of the barns or from the chicken houses may bring enough material to cause trouble. The child's room should, if possible, be moved to a part of the house most protected from this influence. Hyposensitization may be started with feathers while he is away from home for the month mentioned. The dose depends on the reaction of the patient. One cannot start with too low a dilution for the sake of safety. One-tenth cc. of a 1:1,000,000 solution of a commercial preparation given subcutaneously is probably a safe starting dose. The dosage should be raised individually in each case. The interval may be once in three days to once a week. No injection should be given until all induration is gone from the previous dose. As the dose is increased to the maximum tolerance, the interval is lengthened to about once in two weeks and the treatment maintained for as long as needed.

It would not be wise or safe to attempt hyposensitization with both feathers and horse dander simultaneously. If possible, one should avoid the injection of horse dander because of the danger of serious reactions. If it is used, it should be started even more cautiously than feathers. Finally, one must keep in mind that such patients are usually highly sensitive to horse serum and that the administration of any antitoxin made from horse serum is dangerous.

#### MASSIVE HYPERTROPHY OF BREASTS

*To the Editor:*—A woman aged 26, unmarried, has enormous hypertrophy of both breasts, which began shortly after puberty and has continued to the present. Are there any data as to the progressiveness of such a condition? It has a bad effect on the patient's psyche, as it seems to be a detriment to a possible marriage. What is the latest treatment by means of plastic surgery? CLARENCE A. WELLS, M.D., Quincy, Ill.

*ANSWER:*—Massive puberty hypertrophy of the breasts is an uncommon condition and, as the name implies, it usually begins to manifest itself at puberty, shortly before or after the menarche. Both breasts are usually involved but one may be considerably larger than the other. Generally the breasts grow excessively for a few months, reaching the maximum within two years. This patient has the rarer type, in which the condition continues to progress until radical treatment is instituted. The exact cause is unknown but one or more endocrine glands are involved in the process. Geschickter, Lewis and Hartman believe that the histology of gynecomastia, puberty development and puberty hypertrophy of the breast is the same. They produced typical gynecomastia in the monkey by injections of estrogenic substance. This as well as other

evidence seems to indicate that puberty hypertrophy of the breasts is an exaggeration of the normal growth changes which occur at puberty and that the direct stimulus for the breast enlargement is derived from estrin and possibly also from progesterin.

At the present time there is no satisfactory way of treating puberty hypertrophy except by surgical measures. Operations for this condition can be performed whereby the patient can be assured a reduction in size of the breasts with normal configuration and location, proper position of the nipples and areolas in the new breasts, ample blood supply and little if any disturbance in breast function. Excellent descriptions of satisfactory operations have been given by Samuel Fomon (*Arch. Surg.* 33:253 [Aug.] 1936) and by Jacques W. Maliniak (*ibid.* 31:587 [Oct.] 1935).

#### SPASTIC PARAPLEGIA

*To the Editor:*—A man, aged 34, was diagnosed as having neurosyphilis at least eight years ago. He had a left hemiplegia in 1931, which cleared up after three or four months, and a year later he had a syndrome of spastic paraplegia, the arms not being involved. The blood and spinal Wassermann reactions at that time were both positive and a syphilitic gold curve was present. He was given malaria and about a year of continuous chemotherapy between 1932 and 1934. Since then he has had mercury rubs and potassium iodide. His blood Wassermann reaction is positive but the spinal Wassermann reaction is negative. The patient has daily massaged his limbs so that in spite of the fact that he is continuously in a wheel chair the disuse atrophy is surprisingly small. The knee jerks are hyperactive bilaterally, and a positive Babinski is present bilaterally. The spasticity is not painful. The cranial nerves are intact; there are no sensory or bladder disturbances. His general physical condition is good. Do you think that the Forster operation for spasticity would be worth trying in such a case? He is anxious to try anything that may possibly help.

M.D., California.

*ANSWER:*—The opinions of syphilologist, neurologist and neurosurgeon would indicate that this patient is not a likely candidate for the Forster operation. It might be that an examination would change that opinion but, in view of the fact that the spasticity is not painful, the advisability of such an operation is questionable. Of course, before expressing a concrete opinion with regard to such an operation it would seem advisable to become more familiar with the condition of the patient's spinal cord to determine whether or not there is degeneration or compression of the spinal cord present. While it is true that the operation might relieve some of the spasticity, it is questionable that it would in any way increase the patient's ability to walk, and in view of the fact that there is no pain, such an operation does not seem warranted.

#### TOXICITY OF PHENOL IN PRESCRIPTION

*To the Editor:*—Could the following prescription possibly be harmful to a patient:

℞ Phenol .....	1 minim
Glycerin .....	10 minims
Peppermint water.....	sufficient to make 1 ounce

Take contents of bottle without water.

What would be the lethal dose, idiosyncrasy and toxicity of such a mixture?

M.D., North Carolina.

*ANSWER:*—This prescription contains only two ingredients that might have a decided systemic action, phenol and peppermint, the water and glycerin being merely the vehicle.

Peppermint water contains about 0.2 per cent of oil of peppermint. The prescription contains 0.06 cc. (1 minim) of the oil. The U. S. P. dose of the oil is 0.1 cc. (1½ minims). Although no data are available as to the exact toxicity of oil of peppermint, a case is known in which about 1 ounce of the oil was taken through carelessness, the only noticeable results being a laxative action and a burning at the anus.

Phenol has a U. S. P. dose of 0.06 Gm. (1 grain), and for the liquefied phenol (90 per cent phenol and 10 per cent water) 0.06 cc. (1 minim). Glycerin favors the absorption but decreases the potency of phenol, but the small quantity of glycerin present in this prescription would have practically no such influence.

The toxicity of phenol varies widely for different individuals. Children are more susceptible than adults. In the adult wide variations have been reported by investigators; 5 Gm. (75 grains) has been reported as causing death. Other investigators have reported the fatal dose as varying between 8.5 and 60 Gm. Thus the minimum lethal dose for man cannot be fixed accurately. In young children poisoning has been reported from 0.2 to 0.5 Gm. (3 to 8 grains) when given in 3 per cent solution. Absorption and elimination are rapid, so that a cumulative action rarely results. Since phenol is largely detoxified in the liver

there is much less systemic action if absorbed from the stomach than if absorbed from the skin of the bladder.

From these facts it would appear that many times the quantity of this prescription, in which the dilution of the phenol is less than 0.2 per cent, would be required to cause any serious disturbance, and the lethal dose of the prescription would be extremely large.

#### INJECTIONS FOR ECHINOCOCCUS CYST

*To the Editor:*—Two months ago I operated on a patient for an echinococcus cyst. The cyst was too large to enucleate entirely, so I cleaned it out as much as possible and put a rubber tube into the cyst cavity. Can you suggest some nonoperative method by which I could obliterate the cyst cavity and thus permit it to close? I was thinking of the possibility of injecting some substance into the cavity for this purpose.

M.D., New Jersey.

*ANSWER:*—Prolonged drainage from an incised echinococcus cyst frequently occurs and is due to persistence of daughter cysts, failure to destroy the chitinous lining and secondary infection. For this reason it is preferable, after a satisfactory exposure and isolation, to aspirate the cyst, inject it with 2 per cent liquor formaldehydi, then incise and remove the chitinous membrane, close up the cavity and obliterate the dead space. Mopping out the cavity or injecting it with from 2 to 4 per cent liquor formaldehydi after the cavity has been draining for several weeks is not as effective but may still bring results. If the cyst referred to is in the liver, special care should be exerted not to break up the adhesions around the sinus and spill the formaldehydi solution into the free peritoneal cavity. The injections should not be repeated too often, as they may result in a prolonged drainage of the bile.

#### ULTRAVIOLET LAMP FOR CORNS

*To the Editor:*—I have an ordinary Sun-Rival Ultraviolet lamp using a number 68 Everready carbon. By employing a number 20 plus spherical lens to concentrate the rays from this lamp, can corns and warts be removed? Is bichloroacetic acid better than concentrated light in the treatment of corns?

ROBERT MONFORT, M.D., Onaway, Mich.

*ANSWER:*—Concentration of light rays on callosities cannot be expected to be of much value in their removal. The penetration of light rays is so slight that even strongly concentrated radiation is not particularly effective for this purpose. The use of concentrated acids for removal of corns or callosities is likewise not recommended because of danger of damage to normal tissues.

The most logical treatment is to pare down the callosities under antiseptic precautions as much as possible by means of a sharp scalpel, going only to the depth of the normal tissues. Following such paring, occasionally an application of an ointment containing 30 per cent salicylic acid in hydrous wool fat may be used to soften the deeper portions of the callosity, after which further cautious paring may be done. The important point in the treatment of corns is to remove friction. For this purpose the callosity should be shielded until it finally disappears, and carefully fitted shoes should replace the ones which have produced the corns. Even if corns are removed, they will promptly return unless the friction that caused them is eliminated.

#### DANGERS FROM GALVANIZING SHEET METAL

*To the Editor:*—Is exposure to the fumes of acids arising from the vats in the process of galvanizing sheet metal recognized as a direct or contributing factor in the development of pulmonary disease? Reference to authoritative literature would be appreciated.

M.D., Wisconsin.

*ANSWER:*—In general galvanizing work the chief fume produced is zinc oxide, which is not an acid. This fume may give rise to metal fume fever, which is primarily a respiratory disease (Sayers, R. R.: *Metal Fume Fever and Its Prevention*, *Pub. Health Rep.* 53:1080 [July 1] 1938). Extensive work also has been reported by Drinker and his associates (*J. Indust. Hyg.* 9:88, 98 [March], 187 [May], 331 [Aug.] 1927). Ammonium chloride is widely used as an overlying coating above molten metal, which might lead to respiratory irritation but has attracted little attention. In the galvanizing of metal sheets, some plants make use of a bath of molten or flaming sulfur, which may become sulfurous acid. This gas or vapor is highly irritating in low concentrations. The effects of sulfur dioxide have been discussed by Kehoe and others (but with reference to another industry) in an article in the *Journal of Industrial Hygiene* (14:159 [May] 1932) entitled "On the Effects of Prolonged Exposure to Sulfur Dioxide."

However, in the preparation of sheet metal prior to galvanizing, sulfuric acid vapors may appear and may be irritating.



Ordinarily, sulfuric acid will not evaporate. Acid may leave pickling vats as a constituent of steam and on the evaporation of the water component may be present in high concentrations. Such acid vapors may induce inflammation of the upper respiratory with bronchitis. In any given galvanizing room, if the galvanizing pots producing zinc oxide are near pickling vats, which may emit sulfuric acid, their combination may take place in the atmosphere, leading to zinc sulfate, which is a definite irritant. This combination has led to inflammation of the gastrointestinal tract eventuating in ulceration (McCord, C. P.; Friedlander, Alfred; Brown, W. E., and Minster, Dorothy K.: *An Occupational Disease Among Zinc Workers*, *Arch. Int. Med.* 37:641 [May], 1926).

This industrial operation, under certain conditions, may provoke several occupational diseases, but involvement of the respiratory tract does not stand out as preeminent.

#### MIXED VACCINE IN BRONCHITIS

*To the Editor:*—A man aged 53, a pilot, complains of chronic bronchitis of many years' duration. He has had various treatments by a number of physicians with little or no relief. On two occasions during the last year, the treatment consisted of Lederle's combined pertussis vaccine. The patient reports that there is more relief from this treatment than from anything else he has received. Is the result psychic or is the treatment of benefit?

GEORGE GOOD, M.D., Union City, N. J.

*ANSWER:*—Various types of vaccines have been used in the treatment of chronic bronchitis and chronic bronchial asthma. The preparation given is representative of most of the respiratory vaccines used except that it also contains Bardet bacilli. No one has proved any special virtue in the use of the latter organisms in chronic bronchitis or asthma, nor is there any definite proof that autogenous are better than stock vaccines.

The apparently good results obtained were probably not psychic but similar to those obtained by the administration of other nonspecific proteins, which unfortunately are usually of only temporary duration. To obtain success with vaccines many believe that it is necessary to inject doses large enough to obtain definite local reactions. If asthma also is present the patient should be given the benefit of thorough cutaneous testing. Something in the environment or diet may be discovered the removal of which may be of great service to the patient.

#### BLADDER AND RECTAL COMPLICATIONS FROM SUBARACHNOID ALCOHOL INJECTIONS

*To the Editor:*—Is it possible to have bladder complications (retention or incontinence) without rectal complications (incontinence) following the subarachnoid injection of absolute alcohol? What is the incidence of bladder dysfunction following the subarachnoid injection of absolute alcohol, and what is the average duration and prognosis?

M.D., Florida.

*ANSWER:*—It is impossible to give accurate data concerning the incidence of loss of vesical function or the incidence of rectal incontinence following subarachnoid injections of alcohol. It is possible to have vesical complications such as retention or incontinence without rectal complications, or vice versa, following the subarachnoid injection of absolute alcohol. It is not possible to predict, prior to such an injection, whether a patient will lose control of the bladder or rectum, or both, but a patient on whom this procedure is to be performed should be impressed with the fact that either or both of these complications may occur. Likewise, it is not possible to give any accurate data as to how long these complications will persist if they do occur and, consequently, the prognosis necessarily must be guarded in each case.

#### DANGERS OF INTRAVENOUS INJECTION OF DEXTROSE SOLUTION

*To the Editor:*—Are there any reported harmful effects resulting from the continued use of dextrose intravenously? M.D., West Virginia.

*ANSWER:*—Experimentally in animals 10 per cent dextrose in water given intravenously has produced serious and even fatal results from amounts comparable to those used clinically. There is such a variation in the indications and course of the conditions for which dextrose solutions are given that it is difficult to outline more than their general use, particularly since there are so many diverse opinions.

The maintenance of the water balance is of importance particularly when given over a period of time, unless it is the intent as in cerebral edema to dehydrate the patient. It is only when chlorides are indicated that they may be added to a weaker solution, such as one of 2.5 per cent. Rarely is it indicated in ordinary conditions such as after operation to give more than

a 5 or 6 per cent solution. The urine should be tested frequently for sugar. A practical method of checking the water balance is by determining the twenty-four hour output and specific gravity of the urine. Blood chemistry estimations are more accurate but frequently too expensive to be practical. Locally, thrombophlebitis occurs more frequently after the high concentrations.

One must try to avoid the extreme discomfort, tendency to pressure sores and pulmonary edema resulting from the patient's lying in one position for continuous or prolonged intravenous administration.

#### GRINDING TEETH IN CHILD

*To the Editor:*—A little girl, aged 4½, who seems in splendid health, has acquired the habit of crunching or grinding her teeth while asleep, especially when she lies on her back. I have consulted various books but find no mention of this condition. Could you please tell me the cause of such a condition and treatment?

M.D., Louisiana.

*ANSWER:*—The exact cause for grinding or gritting of the teeth has not yet been determined. The condition, however, seems to occur most frequently in children of so-called neuropathic constitution. These children, as a rule, are restless and irritable, and they sleep more or less poorly. The condition in itself does not result in any damage to the teeth in the majority of instances, nor does it seem to have any detrimental effect on the health. With increasing age the disorder, in almost every instance, disappears. Treatment should be directed toward the reduction of the child's nervousness, by assuring an opportunity to obtain plenty of rest, sleep, fresh air and sunshine. Calcium therapy given concurrently with vitamin D preparations is suggested in some cases.

#### ALOPECIA AREATA

*To the Editor:*—A man aged 30 has been gradually losing his hair in three large spots on his head. It pulls out without any sign of a root but leaves the scalp smooth. It doesn't change in color. Please advise as to treatment.

M.D., Idaho.

*ANSWER:*—The patient has alopecia areata. This may be due to nervous shock or to long continued mental strain. Attention should be paid to the patient's general physical condition and any foci of infection removed. Locally the affected areas can be painted lightly by the physician every ten days with a 50 per cent solution of tricesol. Every other night the areas can be anointed with a 12 per cent sulfur ointment or, if preferred, the following lotion can be rubbed in:

	Gm. or Cc.
Mercury bichloride .....	0.02
Chloral hydrate .....	8.
Spirit of formic acid.....	15.
Castor oil .....	1.
Alcohol .....	sufficient to make 180.

The quartz lamp is also of value in certain cases. Sufficient treatments should be given to cause an erythema and they should be given once or twice weekly.

#### TERPIN HYDRATE IN ISO-ALCOHOLIC ELIXIR

*To the Editor:*—In *THE JOURNAL*, Sept. 14, 1935, Bernard Fantus presented in an article on advances in therapeutic technique an example of the use of an iso-alcoholic elixir consisting of terpin hydrate 5 Gm. and iso-alcoholic elixir to make 60 cc. I have been unable to have the prescription filled. One druggist asked the patient to return in twenty-four hours; others refused to attempt it. One druggist filled it but the mixture was cloudy. Why? ROBERT M. HOLLAND, M.D., Boston.

*ANSWER:*—There is no incompatibility whatever when the high-alcoholic elixir (N. F. VI) is employed, as is obviously intended when iso-alcoholic elixir is prescribed: terpin hydrate requires a highly alcoholic vehicle for solution.

#### ALLERGIC BLEPHARITIS

*To the Editor:*—In *Queries and Minor Notes* in *THE JOURNAL* of July 16 Dr. E. H. Brown's question on allergic blepharitis suggests that my own case might be of interest. For some years I have been subject to occasional attacks of blepharitis, which I believe are allergic in nature because of the conditions of their onset, the accompanying symptoms and the response to treatment. The attacks most often occur after driving in the country or exposure to the dust of pillows. They are usually preceded by a short, dry cough and tickling in the chest and throat, so slight and of such short duration that I only recently connected it with the blepharitis; severe attacks are often accompanied by nasal congestion and the misery of hay fever. A 1 per cent solution of ephedrine sulfate sprayed into the nose when an attack threatens has for three months now been completely effective in forestalling the attacks; if the swelling has already begun, a little of the same solution directly in the eyes causes rapid remission of the symptoms. EDWARD R. SMITH, Meriden, Conn.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in THE JOURNAL, August 20, page 743.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* Examinations will be held in all centers where there is a Class A medical school and five or more candidates who wish to write the examination, Sept. 12-14. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF ANESTHESIOLOGY: An affiliate of the American Board of Surgery. New York, Oct. 21-22. Applications must be filed sixty days prior to examination. Sec., Dr. Paul M. Wood, 745 Fifth Avenue, New York.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILIGOLOGY: *Written.* Various large cities in the country about Oct. 1. *Oral.* St. Louis, Nov. 11-12. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written* examinations will be held in various parts of the United States, Oct. 17 and Feb. 20. Application for the October examination must be received before Sept. 15 and for the February examination on or before Jan. 1. Sec., Dr. William S. Middleton, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written* examination and review of case histories of Group B applicants will be held in various cities of the United States and Canada, Nov. 5. Last date for applications is Sept. 5. General examination for all candidates (Groups A and B) will be given in St. Louis, June. Applications must be filed not later than sixty days prior to date of examination. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: New York, Oct. 7, and Washington, D. C., Oct. 8. Sec., Dr. John Green, 3720 Washington Blvd., St. Louis, Mo.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Memphis, Tenn., January. Applications for this examination must be filed with the Secretary on or before Oct. 15. Sec., Dr. Fremont A. Chandler, 6 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Washington, D. C., Oct. 7-8. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PEDIATRICS: Detroit, October 26; Rochester, N. Y., November 13; and Oklahoma City, November 15. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York, Dec. 28-30. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: Atlantic City, N. J., Sept. 15-18. Sec., Dr. Byrl R. Kirklm, 102-110 Second Ave. S.W., Rochester, Minn.

AMERICAN BOARD OF UROLOGY: New York, Jan. 13-15. Applications must be submitted not later than Oct. 1. Sec., Dr. Gilbert J. Thomas, 1009 Nicollet Ave., Minneapolis.

Kansas June Examination

Dr. J. F. Hassig, secretary, Kansas Board of Medical Registration and Examination, reports the written examination held at Kansas City, June 7-8, 1938. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Eighty-three candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
College of Medical Evangelists.....	(1938)		80.5
Northwestern University Medical School.....	(1938)		87.9
Rush Medical College.....	(1937)		85.5
University of Illinois College of Medicine.....	(1938)		85.5
University of Kansas School of Medicine.....	(1938)		79,
80.6, 81, 81.6, 81.7, 82, 82, 82.2, 82.3, 82.5,			
82.7, 82.9, 83, 83, 83.2, 83.3, 83.4, 83.5, 83.5, 83.6,			
83.7, 83.9, 84, 84.2, 84.2, 84.4, 84.7, 84.8, 84.8, 84.9,			
85, 85, 85, 85.2, 85.5, 85.5, 85.7, 85.8, 86.1, 86.7, 86.3,			
86.3, 86.4, 86.5, 86.5, 86.5, 86.6, 86.6, 86.9, 86.9, 86.9,			
87.3, 87.4, 87.6, 87.7, 87.7, 87.8, 88.3, 88.4, 89, 89, 89,			
89.4, 89.8, 90, 90.2			
Boston University School of Medicine.....	(1930)		85.1
Creighton University School of Medicine.....	(1937)		81.9,
(1938) 77.6, 80.4, 81.4, 82.3, 85.9			
University of Oklahoma School of Medicine.....	(1936)		82.2
Meharry Medical College.....	(1938)		83.2
University of Wisconsin Medical School.....	(1937)		84.7, 86.4
Medizinische Fakultät der Universität Wien.....	(1936)		80.5*

Thirteen physicians were licensed by reciprocity and two physicians were licensed by endorsement on May 10 and July 1. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University Medical School.....	(1935)		Illinois
University of Illinois College of .....			Illinois
University of Kansas School of .....			Missouri
St. Louis Univ. School of Med .....			Missouri
Creighton University School of .....			New Jersey
Ohio State University College of .....			Ohio
University of Cincinnati College .....			Indiana
Marquette University School of Medicine.....	(1931)		Wisconsin

University of Wisconsin Medical School.....	(1935)	Oklahoma,
(1936) Wisconsin		
Albert-Ludwigs-Universität Medizinische Fakultät,		
Freiburg .....	(1914)	Texas

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad. of
Rush Medical College.....	(1925)	N. B. M. Ex.
Harvard University Medical School.....	(1932)	N. B. M. Ex.
* License has not been issued.		

Colorado June Report

Dr. Harvey W. Snyder, secretary, Colorado State Board of Medical Examiners, reports the written examination held at Denver, June 15-17, 1938. The examination covered 8 subjects and included 163 questions. An average of 75 per cent was required to pass. Forty-three candidates were examined, all of whom passed. Ten physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
College of Medical Evangelists .....	(1938)	78.5,	82, 83
University of Colorado School of Medicine.....	(1938)		80,
81, 81, 82, 82.5, 83, 83, 83.5, 84, 84, 84, 84, 84,			
84, 84.5, 85, 85, 85, 85, 85, 85, 85, 85, 86, 86, 86,			
86, 86, 86, 87, 87, 87, 87, 88, 88, 89			
Northwestern University Medical School.....	(1938)		92
Osteopath * .....			77.5

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad. of	
University of Kansas School of Medicine.....	(1916),	(1936)	Kansas
Johns Hopkins University School of Medicine.....	(1912)		Ohio
Barnes Medical College, Missouri.....	(1904)		Kentucky
Washington University School of .....			Missouri
University of Nebraska College of .....			Nebraska
University of Rochester School of .....			New York
University of Cincinnati College of .....			Ohio
University of Wisconsin Medical School.....	(1932)		Oklahoma

\*Licensed to practice medicine and surgery.

Wyoming June Examination

Dr. G. M. Anderson, secretary, Wyoming State Board of Medical Examiners, reports the oral and written examination held at Cheyenne, June 2, 1938. The examination covered twelve subjects and included 120 questions. An average of 75 per cent was required to pass. Five candidates were examined, all of whom passed. Two physicians were licensed by reciprocity after an oral examination. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Colorado School of Medicine.....	(1937)		83
Northwestern University Medical School.....	(1938)		80*
Rush Medical College .....	(1937)		84
University of Illinois College of Medicine.....	(1937)		78
Creighton University School of Medicine.....	(1936)		77

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University Medical School.....	(1922)		Iowa
Univ. of Michigan Dept't of Medicine and Surgery..	(1899)		Montana
* This applicant has received the M.B. degree and will receive the M.D. degree on completion of internship.			

South Carolina June Report

Dr. A. Earle Boozer, secretary, State Board of Medical Examiners of South Carolina, reports the written examination held at Columbia, June 27-29, 1938. The examination covered seventeen subjects and included fifty-six questions. An average of 75 per cent was required to pass. Forty candidates were examined, thirty-nine of whom passed and one failed. Eight physicians were licensed by reciprocity and one physician was licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Emory University School of Medicine.....	(1938)		84
University of Pennsylvania School of Medicine.....	(1938)		86.9
Medical College of the State of South Carolina.....	(1938)		78.3,
79.5, 79.9, 79.9, 80.4, 80.6, 81, 81.6, 81.6, 82.1, 82.3,			
82.3, 82.5, 84, 84, 84, 84.1, 84.9, 85.1, 85.3, 85.4, 85.8,			
86.1, 86.1, 86.5, 86.5, 86.6, 87.3, 87.8, 88.1, 88.3, 88.3,			
88.4, 88.6, 90, 90.6			
University of Vermont College of Medicine.....	(1935)		86.8
School	FAILED	Year Grad.	Per Cent
Boston University School of Medicine.....	(1899)		71.6

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Georgia School of Medicine.....		(1936, 2)	Georgia
Bennett Medical College, Cincinnati .....		(1933)	Illinois
Tulane University of Louisiana .....			Louisiana
Ohio State University College .....			Ohio
University of Tennessee .....			Tennessee
Medical College of Virginia.....		(1933)	Virginia
School	LICENSED BY ENDORSEMENT	Year Endorsement Grad.	of
Duke University School of Medicine.....		(1935)	N. B. M. Ex.

## Book Notices

**General Technic of Medication: An Introduction to Medicinal Technology.** By Bernard Fantus, M.S., M.D., Professor of Therapeutics, University of Illinois College of Medicine, Chicago. Third edition. Cloth. Price, \$2. Pp. 626. Chicago: American Medical Association, 1938.

The stated purpose of this book is to combat the slipshod methods so characteristic of many physicians in ordering medicines. While the author does not avowedly present a textbook on the prescription and is apparently far from considering his work a treatise on therapeutics, from the pedagogic point of view he nevertheless manages to make distinct contributions in both fields. It is indeed the reviewer's opinion that no finer book on prescription writing than this exists and that were its use compulsory in all medical schools the profession would rapidly advance in the "technic" of medication. But unfortunately few schools have a place in the curriculum for such "major" hours as a prescription course based on this work would require. Considering the book as a supplementary textbook in therapeutics only, one may question the advisability of burdening the student with pages of description of procedures which can be grasped in a few minutes of sharp watching in the hospital. Nevertheless there is something of undoubted value for the practicing physician on nearly every page of this book, and considering the essentially tedious nature of these subjects they are presented in a manner as little tiring as one could probably hope for. The third edition is brought well down to date and includes of course such alterations as were necessitated by new editions of the U. S. Pharmacopeia and the National Formulary.

**The Psychology of Early Growth Including Norms of Infant Behavior and a Method of Genetic Analysis.** By Arnold Gesell, Ph.D., M.D., Sc.D., Director of the Clinic of Child Development and Professor of Child Hygiene in Yale University, and Helen Thompson, Ph.D., Research Associate in Biometry, The Yale Clinic of Child Development. Assisted by Catherine Strunk Amatruda, M.D., Research Pediatricist, The Yale Clinic of Child Development. Cloth. Price, \$4. Pp. 290, with 30 illustrations. New York: Macmillan Company, 1938.

This latest volume from the clinic of child development at Yale University maintains the high scientific standards as well as the pleasing format of earlier publications. It takes the place of the volume, now out of print, on the Mental Growth of the Preschool Child and adds thereto a fully documented account of mental and physical growth during infancy on which have already been published *An Atlas of Infant Behavior, Infancy and Human Growth, and Infant Behavior*.

When a physician takes up a volume which describes stages of development, he expects, on the basis of physical measurements to which he is accustomed, to find quantitative determinations neatly and clearly defined which he may use with little or no qualifications as measures of progress. He may therefore feel somewhat at a loss at first in finding that no such simple and concrete measures are possible for determining behavior. He is apt not to realize that in dealing with psychomotor processes he is exploring a dynamic complex of which the outlines are indeed fundamentally regulated by intrinsic determiners but of which the expression is modified by a sensitivity to environmental influences.

The reviewer has recently had the opportunity to watch the efforts of a month-old monkey (*Macacus rhesus*) learning to use its locomotor mechanism. The animal could not yet sit up with any security. Nevertheless it was attempting to "muscle up" on parallel bars and to climb a trellis. Every now and then it would fall down on its back and could roll over prone only with help from its mother. Roentgenograms showed that its bodily development was already the equivalent of that of a child between 5 and 6 years of age. Therefore one may

assume, on the basis of Coghill's work, that the motor pattern in the monkey was already fully established and that learning and experience alone were necessary to transform its motor capacity into motor ability. It was engaging all postural and prehensile motor patterns at once. In two weeks' time the monkey had learned to use with fair efficiency its several motor capabilities.

Man however is born in a far more immature stage of development. The delimiting motor patterns complete themselves slowly. Prehensile capacity, though appearing early, undergoes progressive development over a period of eighteen months. Postural and locomotor capacity, though also appearing early, continue to develop so that the child is already 3 years old before he can learn to ride a tricycle.

This great extension of time for the development in man of motor patterns which are already complete in the monkey soon after birth means that infants must very gradually transform these slowly maturing motor capacities into motor abilities. There will then be unequal developments in motor patterns and seeming contradictions in motor abilities rendering impossible the definition of stages by simple rules. Each stage is represented by a constellation of activities, not by a single achievement. Once the physician has mastered this fundamental conception, he will have no difficulty in following the clearly described stages in development portrayed by the authors.

There are however five different fields of behavior for human psychomotor development, namely postural, prehensile, perceptual, adaptive and language. Although the constellation of achievement in each of these gives important information on the stage attained, the composite maturity levels of each must not be averaged. The maturity level in postural behavior, for example, is more accurately determined than that of social (adaptive) behavior because of the greater number of items in reference to posture.

There are allusions on page 223 to clinical relationships of stages attained in these several fields, but as the authors are concerned only with the achievements in health and in uninterrupted progress, these are merely sketched in outline. Nevertheless a careful study of the text, which is not to be accomplished without sweat and tears, will guide the clinician to a correct interpretation of his observations. The volume makes a distinct contribution to our study of the standards of health.

**The Truth About Vivisection.** By Sir Leonard Rogers, K.C.S.I., LL.D., M.D., Hon. Treasurer, Research Defence Society. Cloth. Price, 5s. Pp. 182, with 9 illustrations. London: J. & A. Churchill, Ltd., 1937.

Nowhere has there been a more complete or comprehensive puncturing of the claims of the antivivisectionists than in England, where two royal commissions have gone into the matter exhaustively and in each instance have brought in conclusions favorable to the continuation of the use of animals in research. They have, in other words, found the claims of the opponents of scientific research untenable. Yet, as this book points out, the activities of the antis continue unabated and are based, as always, on the same old tissue of lies, evasions, garbling of quotations, suppression of evidence, emotionalism, hair tearing, breast beating, and screaming charges which are never substantiated. This little book brings the picture of antivivisectionism in England down to date by cataloguing the activities of the sect since the second royal commission of 1906; the first royal commission met in 1875. The author points out that in spite of the findings of the royal commissions the antivivisectionists still:

1. Continue to deny and contradict the unanimous verdicts of two royal commissions.
2. Continue to deny the ethics of animal experimentation.
3. Continue to make their often refuted charges of cruelty.
4. Continue to use misleading statements condemned by the royal commissions.
5. Continue to waste donated and trust funds in the pursuit of objectives rejected by two royal commissions.

This book, which so completely, logically and devastatingly reduces all the claims of the antivivisectionists to absurdity and shows how their activities are contrary to the public interest, should be of great interest to American readers because American antivivisectionists adopt the same tactics and often fall back on quotations from British sources or cite conditions or experiences in England as a basis for their demands in this

country. A knowledge of the collapse of their movement in England under the pitiless and unimpeachable investigation of a royal commission in 1875 and another in 1906, plus the evidence that they have learned nothing and forgotten nothing as a result of these experiences, should lead to a renewed vigilance in this country against their possible inroads. They are constantly on the alert to break in. As this is written, they are endeavoring to initiate a measure in California under the specious title of "Humane Pound Law," which, if enacted, will cripple medical education in that state, to say nothing of placing handicaps on all research involving the use of animals and hampering the teaching of all the biologic sciences and the manufacture and testing of biologic products and many drugs.

**The Practice of Urology.** By Leon Herman, B.S., M.D., Professor of Urology, University of Pennsylvania Graduate School of Medicine, Philadelphia. Cloth. Price, \$10. Pp. 923, with 504 illustrations. Philadelphia & London: W. B. Saunders Company, 1938.

A new book on the practice of urology designed primarily for the general practitioner and surgeon should be of great aid to the medical profession in general. While not written in the usual textbook manner, the book should be of value to the medical student as a source of reference. Each section is well outlined and the work as a whole makes good reading. The sections dealing with the various aspects of the diagnosis and treatment of diseases of the urogenital system are discussed from the author's own point of view. It is of interest to note that he believes that nephropexy is again returning into favor among urologists. His discussion of the subject, however, is not convincing and the chapter ends with a plea for renal sympathectomy at the time of nephropexy in order to obtain best results. His discussion of the subject of lithiasis is not well balanced. Too much space is devoted to detailed description of dietary therapy of unproved value. The relative importance of excretory urography in diagnosis, particularly in the hands of the general practitioner, has not been sufficiently stressed. There is too little reference to European literature, and the quotations from American references are in some instances not as carefully selected as they might be. The illustrations are as fine as any to be found in present day volumes. Dr. Herman has given a valuable contribution to the field of medical literature and it is in keeping with the best traditions of Philadelphia medicine.

**Public Health and Medical Licensure in the State of Mississippi 1789-1937.** By Felix J. Underwood, M.D., Secretary and Executive Officer, Mississippi State Board of Health, and R. N. Whitfield, M.D., Assistant Secretary, Mississippi State Board of Health. Cloth. Price, \$1. Pp. 175, with illustrations. Jackson, 1938.

The Mississippi State Board of Health was formed in 1877, the necessary law having been modeled after that of Georgia, thus making the board of health essentially a product of the Mississippi State Medical Association. There was no appropriation until the following year, when the legislature granted \$250 for the salary of a secretary on a part time basis, \$1,000 for expenses of members attending meetings, and \$1,500 for books, stationery and supplies.

Mississippi had a severe epidemic of yellow fever in 1878. The town of Holly Springs had 1,440 cases with 304 deaths. The records of yellow fever at Orwood and Taylor kept by Dr. H. A. Gant were useful to Walter Reed in his experimental work on mosquito transmission. Dr. Gant, who was a member of the Mississippi State Board of Health from 1890 to 1901, was associated with Dr. H. M. Carter during this epidemic. When this book was written (1937) Dr. Gant was still living at Columbia, Tenn.; his recollections of yellow fever epidemics were recently published in the Mississippi Doctor.

The modern history period of public health in Mississippi began in 1910. Credit is given to Dr. W. S. Leathers for bringing the health work of the state from obscurity to prominence. The Bureau of Vital Statistics was established in 1912; the state was admitted to the death registration area in 1919 and to the birth registration area in 1921. A campaign against typhoid in one county in 1914 directed by a member of the U. S. Public Health Service was the beginning of federal participation in Mississippi's health program. Then came the beginning of full time county health departments about 1917,

and of malaria control in 1915. The Rockefeller Foundation gave financial assistance and personnel to organize the program and in 1929 a separate division of malaria control was established.

Joseph Goldberger and George Wheeler of the U. S. Public Health Service carried on experimental work on pellagra at the Mississippi Penitentiary, certain prisoners accepting the governor's offer of pardon for submitting themselves to the experiment. Goldberger and Wheeler concluded from the experiments that pellagra developed in at least some of the volunteers as a result of a restricted diet. The Mississippi State Tuberculosis Sanatorium was established in 1916. During the influenza pandemic in 1918-1919 there were 9,234 deaths reported in Mississippi and 213,104 cases. A Department of Child Hygiene and Public Health Nursing got under way in 1921 with Dr. Felix J. Underwood, then director of the Monroe County Health Department, in charge. A progressive public health law was approved by Governor Whitfield in 1924, in which year Dr. Underwood became state health officer. The book contains also discussions of public health regulations and biographies of those who have taken part in the development of public health work in Mississippi.

**Feeding Behavior of Infants: A Pediatric Approach to the Mental Hygiene of Early Life.** By Arnold Gesell, Ph.D., M.D., Sc.D., Professor of Child Hygiene and Director of the Yale Clinic of Child Development, the School of Medicine, Yale University, and Frances L. Ilg, M.D. Cloth. Price, \$4.50. Pp. 201, with 200 illustrations. Philadelphia, London & Montreal: J. B. Lippincott Company, 1937.

This volume is devoted to the behavior aspects of infant feeding. It deals particularly with normal feeding behavior and minor deviations from it. The material in the first section of the book is based on a study of the general behavior development of normal children within the period from birth to six years. Then follow chapters covering the motor mechanisms of feeding, including suckling, mastication and swallowing. There is a description of the implements and technics of feeding, breast and bottle behavior, and behavior with spoon, cup, mouth and hands. The third section deals with the regulation of feeding behavior, while in the appendix there are included illustrative biographies. One of the most common problems facing the pediatrician are difficulties in the feeding of infants. The material in this book should aid him in meeting these problems. The descriptions of normal behavior will also guide the physician in directing the mother concerning the infant's training so that he may suggest attempts at training only when the infant is mentally and physically equipped to form the desired habits. This book will be found valuable not only to physicians but also to parents and students of child development.

**A Handbook of Accepted Remedies: Symptoms and Treatment of Poisoning; Diagnostic Procedures; Miscellaneous Information.** Edited by P. J. Hanzlik, M.D., Professor of Pharmacology, Stanford University School of Medicine, San Francisco, California. Department of Public Health, San Francisco, California, J. C. Gelger, Director. Second edition. Paper. Price, \$1. Pp. 115. San Francisco: J. W. Stacey, Inc., 1937.

The first edition of this book appeared in 1936. It contained data based in part on standard textbooks of pharmacology, therapeutics, toxicology and clinical pathology, Accepted Dental Remedies and various A. M. A. publications. The second edition, based on revisions of the same source books, includes such new items as Allantoin and Urea, Benzedrine, Crystalline Vitamin B, Mecholyl, Protamine Zinc Insulin, Sulfanilamide and Vinethene. Under "Poisonings," sections on Sulfanilamide and War Gases have been added. There is new material on calculation of doses for man which is not particularly significant. Also added are a nomogram for body surface, a description of the x-ray unit r, a table of the international atomic weights and some statistical formulas used in medicine. There is a new short section on official assays. Mercurochrome and Dinitrophenol have been omitted. It would seem advisable in subsequent editions for the author to refrain from including a title "Endocrine Disturbances" unless he extends the present list of endocrine principles to include their therapeutic uses. On the whole, the information contained in this book is very useful and it should save considerable time for those engaged in work which requires reference to these data. The author deserves much commendation for the excellent result of his efforts to include so much useful

data in a compact handbook. It may be presumed that it enjoys a popularity far beyond that of the staff of the San Francisco Hospital for which it was primarily designed.

Zur Entdeckung der Insulinschocktherapie bei akuten Geisteskrankheiten, insbesondere bei der Schizophrenie. Von Dr. Julius Schuster, gewesener I. Assistent der Pázmány Péter-Universität Psychiatrisch-Neurologischen Universitätsklinik in Budapest. Paper. Price, 2 pengő. Pp. 90. Budapest: Druckerel der Pester Lloyd-Gesellschaft, [n. d.].

This book is published by the author mainly to demonstrate his ability with this method. He tried to accumulate extensive material from the literature on insulin but unfortunately so carelessly that the excerpts lose the value which they had in the original papers. The clear understanding of hypoglycemic, pharmacologic shock in the interpretation of Sakel is to the author after many years of common knowledge apparently unknown. He has confused hypoglycemic shock with brain shock so called by him and in another place he does not differentiate both from allergic shock. The book is so confused that it cannot confuse anybody.

The Truth About Childbirth: Lay Light on Maternal Morbidity and Mortality. By Anthony M. Ludovici. Cloth. Price, \$2.50. Pp. 294. New York: E. P. Dutton & Co., Inc., 1938.

This amazing book stems its origin from the serious reveries of a serious layman. Mr. Ludovici, known to English and American readers as an experienced essayist, pondered on the hitherto inexplicable enigma that easy labor was the portion of primitive woman and dystocia the commonplace for her civilized descendants. From these reveries there arises a series of rational explanations supported by a broad, multilingual literature. Any doctor will be awed by this layman's erudition and thoroughness even though many of the conclusions may appear unwarranted. Each statement of fact is supported by the page reference of the author's authority. The chief defect of the book is that its author writes like a missionary. Throughout he is a humorless protagonist, a fire-eating zealot, a Don Quixote tilting at windmills. Moreover, through some distortion of vision he seems to think that physicians are in league with the devil and together they scheme, plot and strive to make labor annually more difficult and more unsafe.

In the introduction Mr. Ludovici disposes of the hoax that childbearing is an illness. He is convinced with full Freudian conviction that the current attitude to regard birth as an illness is the work of womankind, who subconsciously creates this lugubrious atmosphere as "a means of acquiring power over the male."

In chapter I Mr. Ludovici discusses easy childbirth, quoting extensively from explorers and anthropologists to prove that in yesteryear primitive women labored as rapidly and painlessly as do subprimate animals today. In chapter II he goes beyond this and argues that childbirth should actually be pleasurable. In the third chapter, which is on normal childbirth, he points out that an average labor is not necessarily a normal labor, not more so than the average set of teeth in a community is necessarily a normal set of teeth. In the second part of this book, chapters IV to VIII, he considers the conditions of modern life which operate against normal, painless, pleasurable and safe childbirth.

All in all Mr. Ludovici has written a strong, thought-provoking book. It contains a wealth of intelligent material with an excellent bibliography and index. Many of the author's conclusions the reviewer takes issue with, as would most doctors.

Middle Age Is What You Make It. By Boris Sokoloff, M.D., Sc.D. Cloth. Price, \$1.75. Pp. 204. New York: Greystone Press, 1938.

This book on the hygiene of middle age was written by a physician who died in his early fifties. It is a difficult book to evaluate. In many respects it is far too technical for the lay reader, for whom it is intended. It is not sufficiently comprehensive for the physician. The author is obviously widely read in medical literature, but apparently he did not read with discrimination. He places too much emphasis on the change of the intestinal flora by the administration of lactose; he is, apparently, greatly impressed with the work of Metchnikoff on longevity, the result, perhaps, of an early association between the two men. His discussion of the interrelationship of the

glands of internal secretion is too complicated and too vague to do a lay reader any good, especially such advice as the closing note of one chapter in which he admonishes the reader to take good care of his gland of life, that is to say, his adrenal cortex. How the absorbed reader is to accomplish this feat does not appear. The book is extensively documented and most if not all of the references are to recognized authorities, but the conclusions and the applications of the work of these research workers is confused, inconclusive and inaccurate. While the book contains much good advice and a great deal of information which might be of considerable value, it is not a work which arouses enthusiasm.

Wissenschaftliche Forschungsberichte. Naturwissenschaftliche Reihe. Herausgegeben von Dr. Raphael Ed. Liesegang, Frankfurt a. M. Band XLVI: Virus und Viruskrankheiten bei Menschen, Tieren und Pflanzen: Biologische Einführung in die allgemeinen Forschungsergebnisse, praktischen Anwendungen und Arbeitsmethoden. Von Dr. med. Gustav Seiffert, Medizinrat a. D., Planegg/München. Paper. Price, 16 marks. Pp. 221, with 7 illustrations. Dresden & Leipzig: Theodor Steinkopff, 1938.

In the first sixty-six pages of the book is a general discussion of the viruses, including among other things some of the recent work on the size of virus particles, chemical purification and immunologic considerations. The bulk of the book deals with virus diseases of man and animals. A small amount of space is given to diseases of plants and the virus-like forms such as the rickettsiae and bacteriophage. In concluding, a section is given on the methods used in the study of viruses. The book has definite value in acquainting the reader with some of the recent developments in this field, although it is too incomplete to serve as a reference guide to investigators.

The British Encyclopaedia of Medical Practice Including Medicine, Surgery, Obstetrics, Gynaecology and Other Special Subjects. Under the General Editorship of Sir Humphry Rolleston, Bt., G.C.V.O., M.D. Volume VII: Hyperchlorhydria to Leucorrhoea and Other Non-Haemorrhagic Vaginal Discharges. Cloth. Price, \$12. Pp. 759, with 171 illustrations. London & Toronto: Butterworth & Co. (Publishers), Ltd., 1938.

Volume VII is one of the largest of those included in this new encyclopedia. It goes from "hyperchlorhydria" to "leukorrhoea" and includes particularly important articles on such subjects as hypnotism, immunity, impotence, industrial accidents, infant feeding, insurance, diseases of the joints, labor, diseases of the larynx, and leprosy. Obviously, most important is the section on labor, which occupies more than 170 pages and thus constitutes a brief textbook of obstetrics. This book is as beautifully prepared and printed as are the other volumes of the series and presents adequately British points of view in relationship to the subjects discussed.

Social Service Department of the Mount Sinai Hospital of the City of New York: A Review 1927-1937. Paper. Pp. 80. New York, 1938.

"The first social worker in the Mount Sinai Hospital was appointed in 1906. In 1917 there was a staff of eighteen; in 1927 the staff consisted of forty persons; and in 1937 it has grown to a staff of fifty-four, including professional and clerical staff." The struggles during depression and the developments of social service work in the various hospital departments are explained in a popular manner. The whole constitutes a vivid picture of all the activities of one of the largest hospital social service departments in the country.

Diabetes Insipidus and the Neuro-Hormonal Control of Water Balance: A Contribution to the Structure and Function of the Hypothalamo-Hypophyseal System. By Charles F. Sherr, Ph.D., W. R. Ingram, Ph.D., and S. W. Ranson, Ph.D., M.D. Institute of Neurology, Northwestern University Medical School. Cloth. Price, \$5. Pp. 212, with 71 illustrations. Ann Arbor, Michigan: Edwards Brothers, Inc., 1938.

This volume is excellent in every respect with the exception of the title "Diabetes Insipidus" which appears on the binding. The use of this title would imply that the book contained information regarding the clinical syndrome of diabetes insipidus and its treatment. As a matter of fact, it contains nothing of a help to a practicing physician. It does, however, contain a complete review of knowledge regarding the pathogenesis of diabetes insipidus as determined by careful experimental investigations on animals. It is based on the superlative work performed in the Institute of Neurology, Northwestern University Medical School, and should be of interest to every experimental physiologist and to those students of disease who are interested in a fundamental approach to the problem.



## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Contracts: Salability of "Good Will" of Deceased Physician.**—The defendant, on the death of her husband, a physician, sold to the plaintiff physician the practice and good will of her husband for \$5,000, a note being given for the purchase price. After making three monthly payments on the note the plaintiff was unable to make any further payments, having lost considerable of the practice which the deceased physician had had. The plaintiff made an unsuccessful effort to get the defendant to reduce the amount of the note and then instituted suit to cancel it and to recover judgment for the three payments already made. The trial court gave judgment for the plaintiff, and the defendant appealed to the St. Louis court of appeals, Missouri.

The question before the court was whether the business and good will of the deceased physician constituted a valid consideration for the note. In *Ryman v. Kennedy*, 141 Ga. 75, 80 S. E. 551, the Supreme Court of Georgia dealt with a similar question which involved the sale of a deceased lawyer's business for \$2,500 for which the purchaser had executed a promissory note. The maker of the note brought suit to cancel it and to recover all sums which had been paid on it, on the ground that the thing which the widow of the deceased lawyer attempted to sell was not a subject-matter of sale and that the note was therefore without consideration. The court, in ruling in favor of the maker of the note, used the following language:

Fees earned but not collected by the testator prior to his death, and all choses in action belonging to the testator in connection with his law business at the time of his death, and pending claims which the party of the first part had made arrangements with other attorneys to handle, were expressly excluded from the sale, and nothing was left upon which the contract could operate. The professional skill of the testator as a lawyer entered into the contract of employment by his clients, and the possibility that after his death his clients would consent to the selection of other counsel by the executors or others is too remote a contingency to render the "good will" of the testator a subject-matter of sale.

In *Re Caldwell's Estate*, 107 Misc. 316, 176 N. Y. S. 425, the court held as follows:

The business of a physician who specialized in x-ray pictures as an aid to physicians, and who had a high reputation in his specialized field, and had made many improvements and inventions in the art, had no "good will," transferable after death, and subject to transfer tax, since any good will was personal to the physician, and not to the place of business.

But after a man who has acquired a reputation for great skill or knowledge is dead, persons who would go to his office for the purpose of consulting him and availing themselves of his superior skill would not go there merely because the office was still open and occupied by another person, who had no reputation for superior knowledge or skill.

Again, in *Mandeville v. Harman*, 42 N. J. Eq. 185, 7 A. 37, the court, in discussing a question similar to that involved in the instant case, used the following language:

Professional skill, experience and reputation are things which cannot be bought or sold. They constitute part of the individuality of the particular person, and die with him. There can be no doubt, I think, that if the complainant was the most distinguished physician of the city of Newark, and had by far the most lucrative practice in that city, and he should be so unfortunate as to die next month or next year, it would be impossible for his personal representative to sell his good-will or practice, as a thing of property, distinct from the office which he had occupied prior to his death, for any price. . . . The practice of a physician is a thing so purely personal, depending so absolutely on the confidence reposed in his personal skill and ability, that when he ceases to exist it necessarily ceases also, and after his death can have neither an intrinsic nor a market value. And, if the complainant should make sale of his practice in his lifetime, it is manifest all the purchaser could possibly get would be immunity from competition with him, and perhaps his implied approval that the purchaser was fit to be his successor; but it would be impossible for him to transfer his professional skill and ability to his successor, or to induce anybody to believe that he had.

Much stress was laid by counsel for the defendant on the advantage enjoyed by the plaintiff in obtaining the same office quarters which had been occupied by the defendant's husband. But, said the court, where the good will of a business is based

solely on the professional skill, personal ability, integrity, high standing, learning and acknowledged repute of the owner, then such good will is not dependent on any particular place or location. These qualities are not transmissible, and when the owner, who possesses these traits, dies, the qualities he possesses, the good will, is "gone with the wind." In giving such stress and prominence to the securing of the offices by the plaintiff which the defendant's husband occupied, the court opined that the defendant and her counsel overlooked the kernel of truth contained in certain lines, usually ascribed to Emerson, but which were tenaciously claimed by Elbert Hubbard, which ran as follows: "If a man write a better book, preach a better sermon, or make a better mouse-trap than his neighbor, though he build his house in the woods, the world will make a beaten path to his door."

The judgment of the trial court for the plaintiff was therefore affirmed.—*Magee v. Pope (Mo.)*, 112 S. W. (2d) 891.

**Compensation of Physicians: Hospital Expenses Not Included in Physician's Fee.**—The plaintiff, a physician, agreed with the defendant to undertake the antepartum care and the delivery of the defendant's wife for the sum of \$150. After the services were terminated the defendant refused to pay the fee, and the physician instituted suit. The trial court gave judgment for the plaintiff, and the defendant appealed to the court of appeal of Louisiana, Orleans.

The defendant admitted having made a contract with the plaintiff but contended that the sum agreed on was indefinite in that it was between \$125 and \$150 and that it was to include hospitalization. The issue between the parties, said the court, was narrowed to the sum of \$54 by the testimony and admission of counsel, since it was conceded that \$96 was due to the plaintiff, the cost of hospitalization being \$54. The probability, the court said, that the plaintiff included hospital expenses in naming a sum as the price of his professional services seems very remote. There was in the record the testimony of a physician, other than the plaintiff, to the effect that \$150 was a very reasonable fee for obstetric services in connection with the delivery of a child, particularly the first child. Both this physician and the plaintiff testified that greater skill and care are required and more difficulty is to be expected in the case of a primipara, especially when the mother has reached the age of 29, as had the defendant's wife when the child was born. Their statement in this respect was borne out by the record, for the defendant's wife suffered very serious complications, which endangered her life and caused the death of her unborn child.

For the reasons assigned, the judgment of the trial court was affirmed.—*Cohen v. Wiggin (La.)*, 178 So. 270.

**Insurance, Accident: Varicose Veins in Relation to Death from Thrombosis Following Accident.**—In an accident insurance policy issued by the defendant company to the insured, there was excluded from coverage any "accident, injury, disability, death or any other loss caused wholly or partly, directly or indirectly, by disease or bodily or mental infirmity or medical or surgical treatment therefor." On Nov. 7, 1935, the insured was injured in an automobile accident. His seventh and eighth ribs on the left side were broken at a point in line with the arm pit and he sustained a bruise on the inner side of the left thigh and a wound on the left knee. The insured was afflicted with varicose veins in the area of the bruised portion of the left leg. On the fifth day after the accident, the injured part of the left leg became inflamed and ice packs were applied. By November 19 the inflammation and soreness had subsided and the condition remained without much change until the death of the insured on November 22. The plaintiff, as beneficiary under the policy, brought suit to collect the benefits provided in it. The U. S. district court gave judgment for the plaintiff, and the defendant insurance company appealed to the U. S. circuit court of appeals, seventh circuit.

The insurance company contended that the death was caused wholly or partly by bodily infirmity. An autopsy disclosed the broken ribs and a consolidated area in the lower portion of the left lung which, according to the testimony of a medical witness, could be caused either by pneumonia or by a blood

clot. The first possible cause was rejected because of the absence of other symptoms which are present in pneumonia. In the bruised area of the left leg near the enlarged varicose vein there was found a blood clot, which was removed. "It was a rather slippery formation which filled the blood vein like a cast fills a mold." One end of the blood clot was tapered off in a smooth fashion and the other end terminated abruptly and showed rough edges, indicating that there may have been more of it at one time. One physician testified that an incomplete thrombus indicates that one end is missing and has been carried to a new location in the body and that in his opinion the cause of the death was a breaking off of a portion of this blood clot and its final lodgment in the lung. Three medical expert witnesses testified in the case. The conclusion of one was "I believe if the injury had not been there and that vein had not been damaged, the likelihood of the thrombus forming would have been very remote." Another testified "My opinion is that a varicose condition is predisposed to trauma and that injury may set up a thrombus in that leg." Another witness testified that a blood clot is formed in different ways, one being "an injury that damages the wall of the blood vessel." The attending physician testified that in his opinion the thrombus did not exist in the leg at the time of his first examination of the insured following the accident and that, in his opinion, "the bruise is a causative factor of the thrombus because a damaged blood vessel is cause one for blood clot formation."

There were two facts, the court said, which were significant and not disputed. First, there was no thrombus in the varicose vein or that area before the accident. Secondly, there was only a possibility of a thrombus occurring in the varicose vein in the absence of the injuries sustained. In short, the injury must have caused the thrombus to form in or near the varicose vein. While the bodily infirmity need not be the sole cause of the death to defeat recovery under the policy, the court pointed out, it is well settled that the "cause" as here used, either sole or partial, refers to something other than a disease or affliction rendered more serious by the consequences of the accident. If the accident brought about conditions from which death resulted, the fact that the insured was ill, aged or infirm, or had bodily or mental infirmities, would not bar recovery, provided the accident excited the bodily infirmity into activity and death resulted. If the infirmity alone would not have caused death, it cannot be said to have caused death when the immediate result was occasioned by an infirmity which became active only because of the accident. The circuit court of appeals concluded that the testimony was sufficient to support a verdict that the injury was the proximate and sole cause of the death. The judgment for the plaintiff was therefore affirmed.—*Scanlan v. Metropolitan Life Ins. Co.*, 93 F. (2d) 942.

**Vaccination: Term "Vaccination" Means Inoculation Against Smallpox.**—The defendant was convicted of failing to cause his children to attend a public day school and appealed to the Supreme Judicial Court of Massachusetts.

In September 1935 each of the defendant's children had been permitted to enter the public day school on a certificate signed by a registered physician that the physical condition of the child was such that his health would be endangered by vaccination, such a certificate being required for admission to school of an unvaccinated child. The rules of the school committee required that an unvaccinated child must renew such a certificate every two months in order to remain in school. Such a requirement has been held lawful. *Spofford v. Carleton*, 238 Mass. 528, 131 N. E. 314. Shortly before Jan. 4, 1936, the school authorities notified the defendant to renew the certificates or have the children vaccinated. He did neither but continued to send the children to the public school. Each day, however, they were refused admission by the school authorities, because there was neither a renewed certificate nor vaccination.

The statutory obligation, said the court, to cause children to attend school involves an obligation to put them into condition to attend and cannot be escaped by neglect to qualify them for attendance. The burden of the argument for the

defendant was that the words "vaccinated" and "unvaccinated" do not convey the idea of inoculation against smallpox as distinguished from other diseases and that therefore the statute requiring vaccination as a condition precedent to school attendance was too vague for enforcement. The word "vaccination" was originally used to describe, the court said, the method discovered by Jenner late in the eighteenth century of inoculating with cowpox for the purpose of procuring immunity from smallpox. In the second volume of General Laws of Massachusetts, published in 1823, the earliest statute for compulsory inoculation "with the cowpox," enacted March 6, 1810, was indexed under the word "vaccination." In 1855 a law was enacted which required that all children should be "vaccinated" before attaining the age of 2 years and before being admitted to the public schools. In the statutes of Massachusetts, the court said, and even in common speech, the word "vaccinated," without explanation or qualification, means inoculated against smallpox. The language of the statute was therefore not vague but clear. The judgment of conviction was affirmed.—*Commonwealth v. Childs (Mass.)*, 12 N. E. (2d) 814.

## Society Proceedings

### COMING MEETINGS

- American Academy of Ophthalmology and Oto-Laryngology, Washington, D. C., Oct. 9-14. Dr. William P. Wherry, 107 South 17th St., Omaha, Executive Secretary.
- American Association for the Study of Goiter, Washington, D. C., Sept. 12-14. Dr. W. Blair Mosser, 133 Biddle St., Kane, Pa., Secretary.
- American Association for the Study of Neoplastic Diseases, Washington, D. C., Sept. 8-10. Dr. Eugene R. Whitmore, 2139 Wyoming Ave. N.W., Washington, D. C., Secretary.
- American Association of Obstetricians, Gynecologists and Abdominal Surgeons, White Sulphur Springs, W. Va., Sept. 22-24. Dr. James R. Bloss, 418 Eleventh St., Huntington, W. Va., Secretary.
- American Association of Railway Surgeons, Chicago, Sept. 19-21. Dr. Daniel B. Moss, 547 W. Jackson Blvd., Chicago, Secretary.
- American College of Surgeons, New York, Oct. 17-21. Dr. George W. Crile, 40 East Erie Street, Chicago, Chairman, Board of Regents.
- American Congress of Physical Therapy, Chicago, Sept. 12-15. Dr. Richard Kovacs, 1100 Park Ave., New York, Secretary.
- American Hospital Association, Dallas, Texas, Sept. 26-30. Dr. Bert W. Caldwell, 18 East Division St., Chicago, Executive Secretary.
- American Roentgen Ray Society, Atlantic City, N. J., Sept. 20-23. Dr. Carleton B. Peirce, University Hospital, Ann Arbor, Mich., Secretary.
- Associated Anesthetists of the United States and Canada, New York, Oct. 17-21. Dr. F. H. McMechan, 318 Hotel Westlake, Rocky River, Ohio, Secretary General.
- Association of Military Surgeons of the United States, Rochester, Minn., Oct. 13-15. Dr. H. L. Gilchrist, Army Medical Museum, Washington, D. C., Secretary.
- Central Association of Obstetricians and Gynecologists, Minneapolis, Oct. 6-8. Dr. William F. Mengert, University Hospitals, Iowa City, Secretary.
- Clinical Orthopedic Society, Nashville, Tenn., and Birmingham, Ala., Oct. 7-8. Dr. H. Earle Conwell, 215 Medical Arts Bldg., Birmingham, Ala., Secretary.
- Colorado State Medical Society, Estes Park, Sept. 7-10. Mr. Harvey T. Sethman, 537 Republic Bldg., Denver, Executive Secretary.
- Delaware Medical Society of, Dover, Oct. 10-12. Dr. Allan V. Gilliland, Smyrna, Secretary.
- Idaho State Medical Association, Sun Valley, Sept. 6-10. Dr. Harold W. Stone, 105 North Eighth St., Boise, Secretary.
- Indiana State Medical Association, Indianapolis, Oct. 4-6. Mr. Thomas A. Hendricks, 23 East Ohio St., Indianapolis, Executive Secretary.
- Kentucky State Medical Association, Louisville, Oct. 3-6. Dr. Arthur T. McCormack, 620 South Third St., Louisville, Secretary.
- Michigan State Medical Society, Detroit, Sept. 19-22. Dr. L. Fernald Foster, 311 Center Ave., Ray City, Secretary.
- Mississippi Valley Medical Society, Hannibal, Mo., Sept. 28-30. Dr. Harold Swanberg, 510 Main St., Quincy, Ill., Secretary.
- Nevada State Medical Association, Reno, Sept. 23-24. Dr. Horace J. Brown, 120 N. Virginia St., Reno, Secretary.
- Northern Minnesota Medical Association, Crookston, Aug. 29-30. Dr. J. F. Norman, Crookston, Secretary.
- Pacific Association of Railway Surgeons, Los Angeles, Oct. 7-8. Dr. W. T. Cummins, Southern Pacific General Hospital, San Francisco, Secretary.
- Pennsylvania, Medical Society of the State of, Scranton, Oct. 3-6. Dr. Walter F. Donaldson, 800 Penn Ave., Pittsburgh, Secretary.
- Society of American Bacteriologists, San Francisco, Aug. 30-Sept. 1. Dr. I. L. Baldwin, College of Agriculture, University of Wisconsin, Madison, Wis., Secretary.
- Utah State Medical Association, Ogden, Sept. 1-3. Dr. D. G. Edmunds, 610 McIntyre Bldg., Salt Lake City, Secretary.
- Vermont State Medical Society, Burlington, Oct. 6-7. Dr. B. F. Cook, 154 Bellevue Ave., Rutland, Secretary.
- Virginia, Medical Society of, Danville, Oct. 4-6. Miss Agnes V. Edwards, 1200 East Clay St., Richmond, Secretary.
- Washington State Medical Association, Bellingham, Aug. 29-31. Dr. V. W. Spickard, 1303 Fourth Ave., Seattle, Secretary.
- Wisconsin, State Medical Society of, Milwaukee, Sept. 13-16. Mr. J. G. Crownhart, 119 East Washington Ave., Madison, Secretary.

# Current Medical Literature

## AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1928 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

### Alabama State Medical Assn. Journal, Montgomery

8: 1-60 (July) 1938

- Surgery of Biliary Passages, with Special Reference to Hazards and Their Management. J. W. Means and C. J. Delor, Columbus, Ohio.—p. 1.  
Head Injuries. C. H. Moore, Birmingham.—p. 7.  
Diagnosis and Treatment of Tumors of the Breast. J. O. Lisenby, Atmore.—p. 12.

### American Journal of Cancer, New York

33: 331-498 (July) 1938

- \*Carcinosarcoma. O. Saphir and A. Vass, Chicago.—p. 331.  
Significance of Cell Type in Cervical Cancer. D. G. Morton, San Francisco.—p. 362.  
Unusual Occurrence of High Incidence of Spontaneous Mammary Tumors in the Albany Strain of Rats. W. R. Bryan, G. H. Klinck Jr. and J. M. Wolfe, Albany, N. Y.—p. 370.  
Two Spontaneous Uterine Tumors in Rabbit: Hormone Investigation. J. T. Witherspoon, Indianapolis.—p. 389.  
Neoplasm Studies: IV. Clasmotosis in Melanoblast. C. G. Grand, New York.—p. 394.  
Distribution of Lead in the Cat After Intravenous Injection of Colloidal Lead Preparation and Effect of Irradiation on This Distribution. B. L. Crawford, H. L. Stewart, C. E. Willoughby and F. L. Smith 2d, Philadelphia.—p. 401.  
Anterior Pituitary Gland in Tumor-Bearing Rats. J. Heiman, New York.—p. 423.  
Culpability for Delay in Treatment of Cancer. G. T. Pack and J. S. Gallo, Paterson, N. J.—p. 443.

**Carcinosarcoma.**—Saphir and Vass believe that most of the so-called carcinosarcomas are neither collision nor combination tumors but most commonly are primary carcinomas. The individual cells either show what has been called morphologic variation or have been distorted by chronic productive inflammatory changes within or close to the tumor. In some instances a primary sarcoma had invaded nonmalignant epithelial structures forming inclusions which led to the erroneous diagnosis of carcinosarcoma. Occasionally a so-called carcinosarcoma could be interpreted as a primary carcinoma which had invaded a benign tumor of the connective tissue. A number of carcinosarcomas reported in the literature can be interpreted on the basis of morphologic cellular variations. Transitional cell carcinomas, because of the fact that some of the tumor cells are spindle shaped, are sometimes erroneously referred to as carcinosarcomas, particularly in tumors of the larynx, lungs, esophagus, bladder and urethra. A number of other reported carcinosarcomas are seemingly primary carcinomas complicated by chronic productive inflammatory changes. Malignant tumors, when altered by inflammation, tend to assume indifferent structures in which most of the original features are lost and from which it is usually hazardous to attempt to reach any conclusion regarding histogenesis. Inflammatory changes are most marked in those organs exhibiting cyclic changes, such as the uterus, breast and thyroid; conversely, those organs are more commonly the site of these tumors. Chronic inflammatory changes with fibrosis and many lymphocytes may suggest a tumor of the connective tissue or occasionally a lymphosarcomatous element in primary carcinomas. Chronic productive inflammatory changes are not necessarily confined to "carcinosarcomas" but are present in many malignant tumors. The inflammation seen in the latter, however, is more commonly acute or chronic exudative in character rather than of a long-standing, chronic productive type, such as is almost invariably seen in "carcinosarcomas," particularly in the linitis plastica type of carcinoma. Because of the occasional difficulties in differentiating malignant carcinomatous cells from the cells of young benign tumors of the connective

tive tissue, and because of the presence of giant cells in some of these instances, the cells of tumors of the connective tissue were interpreted as portions of a sarcoma. Because of the pressure of the fibers of tumors of the benign connective tissue the carcinoma cells secondarily become altered, are compressed and resemble sarcoma cells. Close inspection of the histologic pictures accompanying the case reports invariably lead one to believe in the carcinomatous nature of these cells.

### American Journal of Ophthalmology, St. Louis

21: 723-842 (July) 1938

- Filter-Passing Agent as Cause of Endophthalmitis. J. S. Friedenwald and Clara M. McKee, Baltimore.—p. 723.  
Effects of Sulfanilamide as Determined in the Eyes of Rabbits. V. C. Rambo, Boston.—p. 739.  
Irradiation of the Eye and Protective Devices. M. Cutler, H. L. Jaffe and A. Grossman, Chicago.—p. 747.  
Water Content and Solids of Cataractous and Sclerosed Human Lenses. P. W. Salit, Iowa City.—p. 755.  
\*Sulfanilamide in Gonorrheal Ophthalmia: Preliminary Report. L. J. Fernández and R. F. Fernández, San Juan, Puerto Rico.—p. 763.  
Retinal Changes in Hypertensive Toxemia of Pregnancy: Report of Forty-Seven Cases. J. F. Schultz and C. S. O'Brien, Iowa City.—p. 767.  
Contact Lenses with Spheric Optic and Aspheric Haptic Part. F. Nelson, Colorado Springs, Colo.—p. 775.

**Sulfanilamide in Gonorrheal Ophthalmia.**—The Fernándezes used sulfanilamide in the treatment of eight adult cases of gonorrheal ophthalmia. The diagnosis was established by the clinical picture and the presence of gonococci in the exudate stained by Gram's method. All the patients were treated in the dispensary without hospitalization. A daily dose of 2.6 Gm. was regularly employed during the first three days, divided into four doses of 0.65 Gm. On the fourth day a daily dose of 1.95 Gm. was given, 0.65 Gm. being administered three times a day. All patients recovered in a spectacular manner and in a shorter period than that required by other accepted forms of treatment. The results obtained warrant the judicious use of sulfanilamide in all cases of gonorrheal ophthalmia in adults whenever there is no serious contraindication. Smaller doses and special precautions must be used for patients with renal insufficiency, because the excretion of sulfanilamide is slow and in such patients would tend toward accumulation of the drug in the blood.

### Annals of Internal Medicine, Lancaster, Pa.

11: 2079-2340 (June) 1938

- Mistaking Other Diseases for Acute Coronary Thrombosis. J. B. Herrick, Chicago.—p. 2079.  
Infarction of the Heart: II. Symptomatology of Acute Attack. W. B. Bean, Cincinnati.—p. 2086.  
Electrocardiographic Studies in Clinical and Experimental Pulmonary Embolization. W. S. Love Jr., G. W. Brugler and N. Winslow, Baltimore.—p. 2109.  
Subacute Bacterial Endocarditis Following Removal of Teeth or Tonsils. L. Feldman and I. M. Trace, Chicago.—p. 2124.  
Myocarditis: Plea for Early Recognition of Coronary Artery Disease. A. E. Parsonnet, Newark, N. J.—p. 2133.  
\*Physiologic Effects of Extensive Sympathectomy for Essential Hypertension: Further Observations. E. V. Allen and A. W. Adson, Rochester, Minn.—p. 2151.  
Gastric Lesions Associated with Pernicious Anemia. R. N. Washburn and H. M. Rozendaal, Rochester, Minn.—p. 2172.  
\*Tuberculosis in Medical and Nursing Hospital Personnel. J. A. Myers, B. Trach, H. S. Diehl and Ruth E. Boynton, Minneapolis.—p. 2181.  
Acid-Base Water Balance. E. C. Mason and A. A. Hellbaum, Oklahoma City.—p. 2206.  
The Dementia Praecox Problem. G. W. Dishong, Omaha.—p. 2214.  
Rheumatic Erythemas: Critical Survey. H. Keil, New York.—p. 2223.

**Sympathectomy for Hypertension.**—Allen and Adson state that 311 operations have been performed on 156 patients by neurosurgeons at the Mayo Clinic without an operative death. Information relative to blood pressure and general health following postoperative dismissal from the hospital has been secured in 131 instances. Seven patients have died subsequent to operation but not as a result of it. Cerebral vascular accidents occurred in two patients. Decrease in the blood pressure and increase in the rate of the pulse when the patient changes from the recumbent to the upright position occurs commonly following operation. Both orthostatic hypotension and orthostatic tachycardia disappear at variable times after operation, regardless of the effect of operation on the blood pressure. The percentage of patients relieved (amelioration or complete dis-

appearance) of headache, when the effects of operation on the blood pressure were good, fair or were recorded as failure or temporary, were 100, 80 and 76 respectively. Nervousness was relieved after operation when the effects of operation on blood pressure were good, fair or poor respectively in 80, 66 and 67 per cent of the cases. The percentage of patients relieved of nonanginal pain in the left side of the thorax after operation, when the effects of operation on the blood pressure were good, fair or poor were 90, 75 and 60 respectively. The surgical procedure frequently failed to relieve such symptoms as fatigue and dyspnea with exertion. Both dyspnea and fatigue with exertion tend to disappear as the time after operation increases. Since removal of the first and second lumbar ganglions interrupts the sympathetic pathways to the lower extremities, the function of sweating of the lower extremities is eliminated. When operation produces good results on blood pressure, T waves that originally were inverted in the electrocardiogram may become upright and the transverse diameter of the heart, demonstrated on roentgenograms, may decrease. Tachycardia occurs commonly when the patient stands or exerts himself after the operation but this reaction gradually disappears. Following the operation the feet are warm and dry. If the blood pressure has been significantly decreased by operation the hands may be cold, apparently owing to vasoconstriction in these parts. A few patients mentioned an area of numbness, variable in extent in different cases. Disturbances of intestinal function (periods of from three to four bowel movements daily, with stools of soft consistency, alternated with periods of normal bowel movements) were noted in a number of instances. In many instances constipation was relieved. Flatulence or other evidence of disturbed motor activity of the gastrointestinal tract were uniformly absent. The sexual function of women is not impaired. Dysmenorrhea may be relieved. Menstruation is not influenced. Fertility is not affected apparently, although the response of the blood pressure to pregnancy is variable. Avoidance of pregnancy seems advisable ordinarily. Usually libido and potentia coeundi of the male are not impaired. Men may be sterile but are not certainly so. The effects of the operation on blood pressure are not uniform. They vary from poor to excellent. No infallible method of selecting patients for operation is available. As a result of their experience with extensive sympathectomy for essential hypertension, the authors believe that it is advisable to operate on more patients who have mild hypertension and on fewer patients who have severe hypertension.

**Tuberculosis in Hospital Personnel.**—According to Myers and his colleagues, since 1929 entering students in three Minneapolis schools of nursing and one school of education have had the tuberculin test administered. Of all the students entering these schools from 1929 to 1934 an average of approximately 23 per cent have reacted positively on admission. The incidence of positive reactors among the probationers has definitely decreased in the more recent years of the study. All students in the schools of nursing who react negatively to the tuberculin test are retested every six months as long as they remain negative. In each of the four schools the incidence of positive reactors definitely increased before graduation. Primary tuberculous complexes developing among student nurses, as manifested by the positive tuberculin reaction, were sometimes traced to other members of the hospital personnel. Therefore it is recommended that all persons employed in the hospital regardless of their capacity should have adequate examinations for tuberculosis. Most frequently primary complexes were traced to patients who had communicable pulmonary tuberculosis. Every patient entering a hospital, regardless of the admitting diagnosis, should be examined for pulmonary tuberculosis in communicable form. When persons are found to have communicable pulmonary tuberculosis coexisting with the condition for which they entered the hospital, it is recommended that they be isolated in the institution and treated for both conditions. In this way the hospital environment can soon be made safe from the standpoint of contracting tuberculosis. When such a program is in effect, members of the personnel should not show any higher incidence of positive tuberculin reactions or of clinical disease than persons in the general population employed elsewhere. Every member of the hospital personnel who reacts positively to the tuberculin test on employment or subsequently becomes a positive reactor has developed the primary tuberculous complex.

In a small percentage, the roentgenogram has aided in determining the location of parts of the primary complexes. The safest procedure from the standpoint of the student nurse is to keep her from coming in contact with tuberculous patients while in training. This can be done with no particular loss to her future efficiency as a nurse. Only graduate nurses should be employed in tuberculosis services, both in hospitals and in sanatoriums, and such nurses should take graduate training in the fundamentals of tuberculosis before engaging in the active care of patients.

### Archives of Ophthalmology, Chicago

20:1-174 (July) 1938

Cataract Operations in the Prehistoric Age. K. C. Dutt, Calcutta, India. —p. 1.

\*Problem of Rickettsias in Trachoma. P. Thygeson, New York.—p. 16.  
Conjunctivitis Associated with Infection by *Streptococcus Viridans*: Clinical and Bacteriologic Observations in an Epidemic. A. R. Berger, D. H. Goldstein, C. McEwen and Rose C. Alexander, New York.—p. 19.

Influence of Vitamins and Dinitrophenol on Production of Experimental Cataract. M. L. Tainter and W. E. Borley, San Francisco.—p. 30.

Absorption of Visible Light by Refractive Media of the Human Eye. E. Ludvig and E. F. McCarthy, Boston.—p. 37.

Association of Annular Band of Pigment on Posterior Capsule of Lens with a Krukenberg Spindle. W. Zentmayer, Philadelphia.—p. 52.

Testing Fitness for Night Flying: Visual Acuity. C. E. Ferree and G. Rand, Baltimore.—p. 58.

Biochemistry of the Lens: XI. Effect of Galactose on Permeability of Capsule of the Lens. J. Bellows and L. Rosner, Chicago.—p. 80.

Vertical Prism Values in Commonly Used Bifocal Lenses. S. L. Olsho, Philadelphia.—p. 95.

**Rickettsias in Trachoma.**—Thygeson examined trachomatous tissues from Tunis, Brazil and the United States for the rickettsia-like bodies described by Busacca and by Cuénod and Nafat. No minute parasitic bodies other than the elementary and initial bodies of the epithelial cell inclusions of trachoma could be demonstrated. He believes that the formations which the latter observers described as occurring in large numbers in the trachoma follicles are not parasitic but in all probability cell granules and cytoplasmic debris.

### Florida Medical Association Journal, Jacksonville

25:1-52 (July) 1938

The Role of Imponderables in Surgery. J. M. T. Finney, Baltimore.—p. 11.

Proinsulin Zinc Insulin in Treatment of Diabetes Mellitus. L. Limbaugh and K. Hanson, Jacksonville.—p. 21.

Squint. T. Gwathmey, Orlando.—p. 25.

Old Compression Fractures of the Spine. J. R. Boling, Tampa.—p. 27.

Abnormal Bleeding in the Middle-Aged Woman. C. J. Collins, Orlando.—p. 29.

### Johns Hopkins Hospital Bulletin, Baltimore

63:1-58 (July) 1938

Chemistry of Anaerobic Muscular Contraction. E. Lundsgaard, Copenhagen, Denmark.—p. 1.

Metabolism of Aerobic Working Muscles. E. Lundsgaard, Copenhagen, Denmark.—p. 15.

\*Effect of Hyperthyroidism on Metabolism of Vitamin C. R. A. Lewis, Baltimore.—p. 31.

\*Urinary Changes Due to Sulfanilamide Administration. Margaret B. Strauss and H. Southworth, Baltimore.—p. 41.

Pellagra Treated with Nicotinic Acid: Two Cases. R. France, R. D. Bates Jr., W. H. Barker and E. Matthews, Baltimore.—p. 46.

**Hyperthyroidism and Vitamin C.**—Lewis determined the urinary excretion of ascorbic acid before and after subtotal thyroidectomy in five hyperthyroid patients on a constant diet. In all the patients the amount of ascorbic acid excreted before operation was far less than normal. Following thyroidectomy the excretion of ascorbic acid increased in all the patients, reaching a normal value in four of the five patients studied. In four of the five patients the urinary excretion of ascorbic acid before thyroidectomy was similar to that observed in scurvy.

**Urinary Changes Due to Sulfanilamide.**—Strauss and Southworth observed that the administration (to three normal subjects) of sulfanilamide was accompanied by a decrease in the carbon dioxide combining capacity of the plasma, a definite diuresis and an increase in the renal excretion of sodium and potassium. Two dogs showed slight losses of base through renal excretion but not enough to alter the carbon dioxide combining capacity of the plasma even though they received larger doses of sulfanilamide per kilogram of body weight than did the human subjects.

# Journal-Lancet, Minneapolis

58: 305-340 (July) 1938

- Strangulated Hernia Reduced En Masse. W. D. White, Minneapolis.—p. 325.  
Bronchoscopy as an Aid to the General Practitioner. H. D. Harlowe, Virginia, Minn.—p. 327.  
The Student Health Problem of Appendicitis: Report of 1,303 Cases at Student Infirmary and Wisconsin General Hospital. E. R. Schmidt and F. G. Joachim, Madison, Wis.—p. 329.  
Dry Eyes: Effect of Deficient Lacrimation. C. W. Rucker, Rochester, Minn.—p. 331.  
Use of Fluoroscope in Examination of College Students. Ruth Elaine Taylor, Chicago.—p. 333.  
Convulsions in Infancy and Early Childhood. O. C. Gaebe, New Salem, N. D.—p. 335.

# Journal of Pediatrics, St. Louis

13: 1-156 (July) 1938

- Early Lesions of Poliomyelitis After Intranasal Inoculation, with Comments on Their Relationship to Early Clinical Manifestations and to Nonparalytic Cases. H. K. Faber, San Francisco.—p. 10.  
Future of Chemoprophylaxis as a Measure for Practical Control of Poliomyelitis. E. W. Schultz, Stanford University, Calif.—p. 38.  
Persistent Anosmia Following Zinc Sulfate Nasal Spraying. F. F. Tisdall, A. Brown and R. D. Defries, Toronto.—p. 60.  
\*Acute Anterior Poliomyelitis Following Tonsillectomy and Adenoidectomy, with Special Reference to Bulbar Form. R. C. Eley and C. G. Flake, Boston.—p. 63.  
Construction of Emergency Respirator for Use in Treating Respiratory Failure in Infantile Paralysis. P. Drinker and E. L. Roy, Boston.—p. 71.  
Mental Hygiene in an Orthopedic Hospital. J. D. M. Griffin, W. A. Hawke and W. W. Barraclough, Toronto.—p. 75.  
\*Drugs Transmitted Through Breast Milk: II. Barbiturates. R. M. Tyson, E. A. Shrader and H. H. Perlman, Philadelphia.—p. 86.  
\*Id.: III. Bromides. R. M. Tyson, E. A. Shrader and H. H. Perlman, Philadelphia.—p. 91.  
Erythema Annulare Rheumaticum: Clinical Significance in Rheumatic States of Childhood. H. Abramson and A. M. Tunick, New York.—p. 94.

**Poliomyelitis Following Tonsillectomy.**—The fact that the bulbar form of acute anterior poliomyelitis has been reported following recent tonsillectomy and adenoidectomy has suggested that this procedure might in some manner influence the entrance of the virus. A study of 418 consecutive patients with acute poliomyelitis admitted to the medical wards of the Infants' and the Children's hospitals of Boston adds further evidence as to this possibility and strongly suggests that in those instances in which the operation is of an elective nature it may be advisable to postpone it when poliomyelitis is prevalent. Eley and Flake offer the following information in support of this statement. Of 287 cases of spinal poliomyelitis there were only eight patients with a history of a recent tonsillectomy and adenoidectomy. Of the eight patients, only three acquired it between the seventh and the eighteenth day (the commonly accepted incubation period of poliomyelitis) after the operative procedure. Of 131 patients with bulbar poliomyelitis, seventeen had had this operation performed within twenty days prior to the onset of their illness. Fifteen of the seventeen patients acquired the disease within the usual incubation period. Statistical computations demonstrate that the occurrence of this number of cases within the given period cannot be attributed to chance nor can it be attributed to the usual frequency of poliomyelitis. The clinical observations suggest that, if the patient is harboring the virus at the time of the operation, traumatization of the tissues may enable it to gain entrance to the central nervous system by way of the lymphatic system or the blood stream or perhaps by direct neural extension. The fact that one of the patients acquired bulbar poliomyelitis following adenoidectomy without tonsillectomy would indicate that it is not necessarily the latter operation which enables the virus to gain entrance to the central nervous system.

**Drugs Transmitted Through Breast Milk.**—Tyson and his associates studied the transmission of barbiturates and bromides by breast milk in lactating mothers. A total of 164 samples (15 cc.) of breast milk was collected from mothers receiving barbiturates. Chemical analyses of individual specimens of milk after administration of barbiturates in half grain (0.03 Gm.) doses at stated intervals, although amounting in the aggregate to 2 grains (0.13 Gm.) in a day, do not show as high a percentage of positive reactions as do similar specimens after the administration of 1½ grains (0.1 Gm.) at bedtime. Thus, concentrated doses seem to have more effect on

transmission than do cumulative doses. In only two of the forty-one cases was there any clinical effect of the drug on the child, and thus there is the possibility that the child may be affected by the breast milk after medication of the mother with barbiturates. A total of thirty-eight specimens of breast milk was analyzed after the administration of bromide and thirty-seven gave positive results after chemical analysis for the drug. Clinical evidence of transmission was manifested in the child to a marked extent in four cases, although in every case there was a marked diminution in the irritability of the child as well as of the mother.

# Pennsylvania Medical Journal, Harrisburg

41: 879-968 (July) 1938

- Nervous Relationships of Gastrointestinal Tract. F. Kennedy, New York.—p. 879.  
Common Proctologic Disorders in Children. C. C. Mechling, Pittsburgh.—p. 886.  
Few Conditions Frequently Overlooked in Differential Surgical Diagnosis of Abdomen. S. J. Waterworth, Clearfield.—p. 889.  
Intranasal Approach for Removal of Certain Orbital Tumors. E. Stieren, Pittsburgh.—p. 892.  
Intermittent Claudication as an Early Symptom of Cardiovascular Disease. W. D. Stroud and N. P. Shumway, Philadelphia.—p. 894.  
Diagnostic Value of Air Pyelography. B. Hughes, Philadelphia.—p. 897.  
Seborrheic Dermatitis. R. J. Rickloff, Erie.—p. 899.  
Silent Renal Pathology. A. Randall, Philadelphia.—p. 903.  
Status Lymphaticus: Diagnosis and Treatment Preliminary to Surgical Procedures. E. H. Campbell, Philadelphia.—p. 907.  
Some of the Common Defects Found by the Public School Medical Inspector. J. J. Lonsdorf Jr., Scranton.—p. 911.  
Facilities in Pennsylvania for Juvenile Mental Cases. W. C. Sandy, Harrisburg.—p. 913.  
Brain Abscess. S. S. Allen, Pittsburgh.—p. 917.  
\*Epidemic Myalgia or Pleurodynia. R. R. Macdonald, Pittsburgh.—p. 919.  
Necessity and Method of Establishing Residencies in Obstetrics. R. E. Nicodemus, Danville.—p. 920.

**Epidemic Myalgia or Pleurodynia.**—Macdonald presents the clinical and laboratory observations in seventy cases of epidemic myalgia in children, although persons of all ages were attacked during the epidemic. Diagnosis depends on the character of the pain and fever and is extremely difficult except in the presence of an epidemic. In children the disease may be easily confused with acute appendicitis, but the absence of localized pain and tenderness and the relatively low leukocyte count may aid in the diagnosis of epidemic myalgia. In myalgia there is in addition no localized abdominal muscular spasm. Differentiation from pleurisy is difficult in the patients complaining of pain of the chest. In these cases, however, a pleural friction rub cannot be demonstrated. Treatment of the attack is symptomatic. The patients recover rapidly if not treated, but salicylates may be of value in allaying pain. There are no records of death from the disease. Epidemic myalgia, like acute anterior poliomyelitis, occurs during the summer. Accompanying the present epidemic of myalgia the same community suffered an epidemic of benign lymphocytic meningitis.

# New England Journal of Medicine, Boston

218: 1087-1124 (June 30) 1938

- Relation of the Physician to Industry. Emma Sanborn Tousant, Boston.—p. 1087.  
Three Types of Meckel's Diverticulum. T. F. Corriden, Northampton, Mass.—p. 1090.  
Sulfanilamide in Treatment of Gonorrhea in the Female. B. C. Grodberg and E. L. Carey, Boston.—p. 1092.

# Public Health Reports, Washington, D. C.

53: 1065-1118 (July 1) 1938

- \*Metal Fume Fever and Its Prevention. R. R. Sayers.—p. 1080.  
Studies on Trichinosis: VI. Epidemiologic Aspects of Trichinosis in the United States as Indicated by an Examination of 1,000 Diaphragms for Trichinae. M. C. Hall.—p. 1086.

**Metal Fume Fever and Its Prevention.**—The metal fumes which produce fever are most commonly encountered in industries in which metal, such as zinc, is heated in an oxidizing atmosphere to a temperature near its boiling point (zinc 930 C.); for example, in the founding of brass and the oxyacetylene welding of galvanized iron. They may also occur during the melting, stirring and casting of brass. Sayers avers that fumes also result from the fusing of manganese in the manufacture of steel, from cadmium in spelter works or during the melting



of cadmium ingots, from smelting and electrolytic recovery of zinc, from antimony in the printing trade and from the vulcanization of rubber. The metallic oxides commonly given off in the form of fumes or dust in welding processes may originate from several sources—from the materials welded, from the coatings of the surfaces being welded or cut, from the coatings of the electrodes used in arc welding or from the flux rods. Because of the temporary nature of the disease, and, since the patient recovers within a relatively short time, only symptomatic treatment is customary. Metal fume fever may be eliminated through the adoption of an adequate medical and engineering program. In order to control the toxic fumes at their source, operations giving rise to metal fumes should be carried on when practicable in airtight apparatus; that is, a closed process. The usual method, however, is to employ exhaust ventilation with hoods over the process producing the fume. The mechanical ventilation is generally more reliable and satisfactory. The ventilating system should be designed so that a current of clean air is drawn past the operator and away from him toward the work. Masks and respirators to be used for workers exposed to metal fumes should be specially constructed and adapted to the material used by such workers.

### Rocky Mountain Medical Journal, Denver

35: 505-576 (July) 1938

- Aviation Medicine. S. E. Brown, March Field, Calif.—p. 522.  
The Changing Concept of Public Health. R. L. Cleere, Denver.—p. 525.  
The Practical Approach to the Cancer Problem. C. F. Hegner, Denver.—p. 529.  
Recent Developments in Plastic Surgery. D. W. Macomber, Denver.—p. 532.  
Newer Aspects of Infant Feeding. W. W. Barber, Denver.—p. 537.  
Short Wave Therapy in the Pelvis. J. R. Evans, Denver.—p. 543.

### South Carolina Medical Assn. Journal, Greenville

34: 147-172 (June) 1938

- Indications for Surgery in Lesions of the Heart and Pericardium. I. A. Bigger, Richmond, Va.—p. 147.  
Pancreatic Hemorrhage Followed by Fistula. O. B. Mayer, Columbia.—p. 151.

### Surgery, St. Louis

4: 1-160 (July) 1938

- Relationship of Intervertebral Disk to Back Strain and Peripheral Pain (Sciatica). J. S. Barr, Boston.—p. 1.  
Surgical Treatment of Low Back Pain. A. DeF. Smith, New York.—p. 13.  
Relation of Fascia Lata to Mechanical Disabilities of the Spine. F. R. Ober, Boston.—p. 21.  
Surgical Treatment of Affections of Lumbosacral and Sacro-Iliac Joints. J. I. Mitchell, Memphis, Tenn.—p. 33.  
Function of Spleen in Retardation of Shock from Hemorrhage: Experimental Study. E. P. Lehman and C. V. Amole, University, Va.—p. 44.  
Experimental Study of Operations Which Involve Exclusion of Pancreatic Secretion from Intestinal Tract, with Special Reference to Possible Effects on Protein and Fat Digestion and on Metabolism of Liver Cell. F. F. Boyce and Elizabeth M. McPetridge, New Orleans.—p. 51.  
Effect of Ephedrine on Pancreatic Secretion: Method for the Management of Patients Having a Pancreatic Fistula. C. B. Craft, Minneapolis.—p. 64.  
Recurrent Dislocation of Shoulder Joint: Evaluation of Nicola Operation. M. T. Horwitz and A. J. Davidson, Philadelphia.—p. 74.  
Surgical Treatment of Stricture of the Rectum. J. deJ. Pemberton and L. K. Stalker, Rochester, Minn.—p. 81.  
Bile Salts in Treatment of Peptic Ulcer. G. S. Bergh, Minneapolis.—p. 84.  
Carcinoma of Third Segment of Duodenum: Report of Case. L. N. Claihorn and W. G. H. Dobbs, New Haven, Conn.—p. 97.  
Traumatic Fat Necrosis: Report of Case Involving the Buttock. M. B. Cooperman and D. R. Meranze, Philadelphia.—p. 103.  
Chronic Hyperthyroidism: II. Diffuse Toxic Goiter. T. O. Young, Duluth, Minn.—p. 111.  
Use of Zinc Peroxide in Mouth Infections: Preliminary Report. J. P. Wintrup, Wilmington, Del.—p. 124.  
Seymour Haden, Surgeon and Painter-Etcher. W. M. Millar, Cincinnati.—p. 132.

**Bile Salts in Peptic Ulcer.**—Bergh administered iron bile salts orally to thirty-two unselected patients with duodenal, gastric or gastrojejunal ulcer established by roentgenoscopic and roentgenographic examination. All patients were ambulant during treatment. The iron bile salts were given four times a day in doses of 0.65 Gm., with each meal and at bedtime. In a few cases in which the dose (2.6 Gm.) produced an unde-

sirable catharsis the dose was cut to the limit of tolerance. Twenty-six patients, or 81.25 per cent, were definitely improved, while six patients were not improved. Many of the patients who had suffered from ulcer symptoms for years were highly gratified because of the improvement experienced. Ten patients experienced increased distress for periods of three or four days up to two weeks. This may have been due to a local irritative action of the bile salts. A week or ten days after starting the treatment, sometimes more and sometimes less, improvement usually became manifest and gradually progressed until many patients felt entirely well. They soon found that they could eat many foods which had previously caused them distress, and they were glad to return to a general diet. However, many patients still found that the ingestion of greasy or highly seasoned foods might be followed by some degree of discomfort. It also was possible for patients to resume work of a moderately strenuous nature, and some patients were capable of returning to heavy labor. X-ray evidence of healing came more slowly than the clinical improvement, and in the early follow-up examinations it was not unusual to find a niche still present, in spite of the fact that the patient was feeling well, was taking a general diet and had returned to work. Later, however, the niche diminished or vanished, giving x-ray evidence of healing in conformity with the clinical improvement.

**Zinc Peroxide in Mouth Infections.**—Wintrup used zinc peroxide in treating ten cases of acute Vincent's infection, eight cases of chronic Vincent's infection, twelve cases of acute gingivitis, three cases of suppurating periodontoclasia and two cases of radiation necrosis. Zinc peroxide is quite stable and comes not as a pure salt but contains from 45 to 50 per cent of zinc peroxide, from 35 to 40 per cent of zinc hydroxide and from 10 to 15 per cent of zinc carbonate. Only the "medicinal grade" should be used and it must be heated to 140 C. in quantities of not more than 500 Gm. for four hours, to effect sterilization, in accordance with the manufacturer's specifications. Zinc peroxide with 7.5 per cent of available oxygen, nearly as much as sodium perborate, loses its oxygen slowly. Therein lies its great virtue for the treatment of oral infections. Zinc peroxide has a  $pH$  of 8.8 and remains stable over a long period, giving up its oxygen so slowly that great amounts of it can be utilized to permeate interstices, crypts and pockets, in which organisms associated with all types of gingivitis, pyorrhea, osteomyelitis and necrosis of the soft tissues abound. Further, the zinc oxide residue is bland and healing and this is an added desirable characteristic. Best results are obtained when the zinc peroxide is applied as a paste. Following application of local medication, zinc peroxide is used by the patient at home every three hours for the first twenty-four to forty-eight hours and then every four hours. It is recommended that the zinc compound be mixed with water to form a creamy paste. One-half teaspoonful for each application is sufficient. This paste is applied by the patient with his finger or on a sterile swab and massaged gently into the interproximal spaces between the teeth and along the gingival margin. The zinc peroxide thus is placed directly in contact with the tissues and remains there for a long time, giving off its oxygen. No effort should be made to rinse the mouth and, as the powder is slowly mixed with the saliva, the patient should expectorate this residue. Patients are seen every other day for further local treatment; the zinc peroxide is continued until complete healing has taken place, and then for another week as an added precaution.

### Western J. Surg., Obst. & Gynecology, Portland, Ore.

46: 341-394 (July) 1938

- Post-Traumatic Pain Syndromes: Interpretation of Underlying Pathologic Physiology: Division I. W. K. Livingston, Portland, Ore.—p. 341.  
Sarcoma Following Benign Bone Lesions. A. R. Kilgore and L. C. Abbott, San Francisco.—p. 348.  
Acute Primary Auricular Neuralgia as Cause of Earache: Its Diagnosis, Etiology and Treatment, with Some Remarks on Sensory Supply of the Ear. M. A. Glaser, Los Angeles.—p. 355.  
Differential Diagnosis of Jaundice: Division I. Laboratory Tests Useful in Distinction Between Surgical and Nonsurgical Conditions. K. E. Hynes and C. R. Jensen, Seattle.—p. 371.  
Influence of Pentobarbital Sodium on Duration of Labor. D. N. Danforth and W. C. Danforth, Evanston, Ill.—p. 379.  
Occiput Posterior Position: Its Incidence and Treatment in 1,000 Personally Conducted Labors. G. S. Beardsley, Eugene, Oregon.—p. 387.

## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

### British Journal of Urology, London

10: 109-218 (June) 1938

- Tuberculous Epididymitis. C. A. Wells.—p. 114.  
Tests of Renal Function. C. P. Stewart.—p. 131.  
Deposition of Uric Acid Crystals in Perirenal Capsule and Kidney Tissues. G. de Illyès.—p. 144.  
Gonococcal Infection of Upper Urinary Tract. W. S. Mack and Christina B. Buchanan.—p. 150.

### British Medical Journal, London

1: 1349-1406 (June 25) 1938

- Clinical Aspects of Transmission of Effects of Nervous Impulses by Acetylcholine. F. R. Fraser.—p. 1349.  
The Unconscious Mind and Medical Practice. E. Jones.—p. 1354.  
Uterine Rupture Following Cesarean Section. C. E. B. Rickards.—p. 1359.  
\*Nervous Complications of Measles. A. C. E. Cole.—p. 1361.  
Sulfanilamide Therapy in Meningococcal Meningitis: Report of Three Cases. T. C. Morton, V. S. Ewing and J. D. Ebsworth.—p. 1362.

**Nervous Complications of Measles.**—Cole points out that the pathologic changes of nervous complications of measles appear to be identical with those occurring in postvaccinal encephalitis and in the forms of encephalitis following other acute fevers (mumps and chickenpox). The clinical manifestations have been summarized by Ford (1928). He distinguishes six groups: (1) mild and transient diffuse cerebral symptoms, (2) multiple focal or diffuse lesions of the nervous system, (3) single focal cerebral lesions (aphasia or hemiplegia), (4) cerebellar syndromes of varying degrees of severity (generalized ataxia, intention tremor, loss of muscle tone, slow or scanning speech and nystagmus), (5) paraplegia and spinal cord syndromes and (6) toxic psychoses and papilledema. A case of the postfebrile variety of measles encephalitis is presented. There was no rash. The encephalitis occurred in a mother of two children after mild attacks of measles in the children. The condition began with multiple focal and diffuse lesions and later concentrated on the cerebellar functions. The sequels were minimal, affecting only cerebellar function, and were unaccompanied by mental defects or personality changes. The possible differential diagnosis of acute disseminated sclerosis was excluded by the mental symptoms in the acute attack and by the absence of any further development in over a year. Whether the illness followed an atypical attack of measles without the rash can be less certainly stated.

### Edinburgh Medical Journal

45: 461-528 (July) 1938

- Natural Chemical Stimulants. H. Dale.—p. 461.  
Reaction of Urine in Disease and in Treatment. D. M. Lyon.—p. 481.  
Debatable Tumors in Human and Animal Pathology: V. Giant Cell Tumor of Bone. E. K. Dawson, J. R. M. Innes and W. F. Harvey.—p. 491.  
Effect of Reticulo-Endothelial Blockade on Natural Antibodies and Natural Immunity Reactions. S. Thomson.—p. 505.  
Intrapleural Division of Adhesions in Pneumothorax Treatment of Pulmonary Tuberculosis (Internal Pneumolysis). B. M. Dick.—p. 518.

### Journal of Mental Science, London

84: 451-588 (May-July) 1938

- Neurogenesis and Development of "Synapses," with Particular Reference to Conditions in Lepidosiren Paradoxa. T. Jones.—p. 451.  
Determinants of Physique. J. I. Cohen.—p. 495.  
Mental Testing in Male Adolescent Delinquents. F. H. Taylor.—p. 513.  
Treatment of Mental Disorders and Mental Deficiency in Continental Criminal Law. H. Mannheim.—p. 524.  
\*Estimation of Vitamin C Content of Urine of Fifty Patients Suffering from Psychoses. L. Minski and N. D. Constantine.—p. 541.  
Enhancement of Physical and Mental Capacity Following Treatment of Chronic Infective Disease. H. F. Fenton.—p. 544.  
Head Injuries and Mental Disorder. T. C. Graves.—p. 552.  
Etiology of Confusional Syndrome and Use of T. A. B. Vaccine. D. N. Parfitt.—p. 563.  
Six Months' Experience with Cardiazol Therapy. G. S. Nightingale.—p. 574.  
Histamine and Insulin in Treatment of Schizophrenia and Other Mental Diseases. H. Hill.—p. 581.

**Vitamin C in Urine in Psychoses.**—Minski and Constantine estimated the vitamin C content of the urine in fifty patients after they had been hospitalized for some weeks, by which time the regular hospital diet would exclude any errors which might have been caused by underfeeding before admis-

sion to the hospital. The average daily output of the fifty patients was on the low side, being approximately 9.16 mg. of ascorbic acid in twenty-four hours, while the average excretion of ten members of the staff who were on comparable diets was 14.6 mg. No definite conclusions can be reached, but the weight of many of the patients was on the low side, and whether there is any relation between the weight of the body and the excretion of vitamin C is a matter for further investigation.

### Lancet, London

1: 1373-1428 (June 18) 1938

- Control of Infection in Children's Wards. R. H. Dobbs and R. Kempthorne.—p. 1373.  
Secondary Carcinoma of Bone. F. Roberts.—p. 1378.  
Blood Changes in Anxiety States. D. Hill and S. Taylor.—p. 1382.  
Adult Scurvy Associated with Vitamin B<sub>1</sub> Deficiency. J. B. Young.—p. 1385.  
\*Blood Transfusion with Heparin. H. Knoll and O. Schürch.—p. 1387.  
Biologic Effects of Synthetic Estrogenic Substance 4: 4'-Dihydroxy- $\alpha$ :  $\beta$ -Diethylstilbene. E. C. Dodds, W. Lawson and R. L. Noble.—p. 1389.  
Massive Pneumonia, Type III, with Massive Collapse, Treated with 2-( $p$ -Aminobenzenesulfonamido) Pyridine: Case. M. Telling and W. A. Oliver.—p. 1391.

**Blood Transfusion with Heparin.**—Knoll and Schürch investigated the possibility of simplifying the technic of transfusion by the use of heparin to such an extent that it could easily be carried out by a general practitioner without special apparatus and an experienced staff. To samples of 10 cc. of human blood, some in paraffined and some in unparaffined test tubes, 20, 30, 40, 60, 80 and 100 inhibiting units of heparin were added. After various periods the state of the blood was tested with a glass rod. The same blood without heparin was used for comparison. The time of coagulation was found to be increased approximately in proportion to the amount of heparin added. A series of transfusions was carried out in which the blood withdrawn in the Merke apparatus was treated with 1,000 inhibiting units of heparin per hundred cubic centimeters of blood, the heparin being diluted with saline solution to 20 cc., mixed and injected. All the transfusions of from 150 to 500 cc. of blood carried out in this manner, some with paraffined, others with unparaffined, Merke containers, were completely successful and free from complications. The sole advantage that this method has over the citrate method is that paraffined vessels can be dispensed with. Therefore the authors turned to the method of Hedenius (1937) of heparinizing the donor. They determined the coagulation time of their patients from fifteen to thirty minutes after the intravenous injection of increasing doses (measured by inhibiting units) of heparin, the doses being diluted with saline solution to 20 cc. in order to ensure a slow and regular injection taking about five minutes. Experiment showed that doses of 1,500 inhibiting units of heparin increased the coagulation time and this increase was almost doubled by using 20,000 units and about trebled by using 40,000 units. The maximal effect was attained from fifteen to thirty minutes after the injection; there was always a fall ninety minutes after the injection and after two and one-half hours normal values were again reached in every case. The increase of the coagulation time was small in comparison with that observed in vitro. Large doses of heparin must be used when the donor is being heparinized because lesser amounts will not delay the coagulation time sufficiently. In none of the transfusions were there any disturbances in the recipient, and in particular no increase in his coagulation time, so that this method would seem suitable when the recipient is subject to the likelihood of increased bleeding. The donor's blood will have an increased coagulation time for two hours after the withdrawal of blood and he should be careful during this time.

### Journal of Oriental Medicine, Mukden, Manchoukuo

28: 85-102 (June) 1938. Partial Index

- Statistical Investigations of the Physique of the Applicants for Recruits for Manchoukuo Army: Parts V to VIII. H. Kurihara.—p. 85.  
Urease Reaction of Bacteria Causing Undulant Fever. M. Arai.—p. 89.  
Clinical and Statistical Observations on 450 Cases of Erysipelas. M. Sawada.—p. 93.  
Studies on Amylase Action of Pulmonary Tissue: I. Studies of Determination of Optimal Hydrogen Ion Concentration and Influences of Halogen Salts. T. Takano.—p. 95.  
So-Called Lichen Scrobiticus. S. Yasui, H. Machara, C. Kobayashi and Kuo Wen Kao.—p. 101.

## Annales de Médecine, Paris

41: 5-84 (June) 1938

Dolichostenomelia. A.-B. Marfan.—p. 5.

Case of Visceral Panarteritis. G. Carrière.—p. 30.

\*“Healthy Expectorators” of Tubercle Bacilli. F. Meersseman.—p. 50.

Hemorrhagic Aplastic Anemia Following Gold Therapy. M.-P. Weil, V. Oumansky and L. Langlois.—p. 78.

“Healthy Expectorators” of Tubercle Bacilli.—Meersseman reports the histories of two young men, aged 24, who had tubercle bacilli in the sputum although careful clinical and roentgenologic examinations always remained negative. The animal tests that were made with the tubercle bacilli detected in the two patients remained negative, but otherwise the bacilli had all the characteristics of the tubercle bacillus. The author thinks that although the detected organisms were true tubercle bacilli their virulence was low. The tubercle bacilli found in the third person whose history is reported produced tuberculous lesions in one of the two guinea pigs in which the suspected sputum was tested. The author further examined, by means of the Ziehl-Nielsen method, the sputums of eighty-four medical students who were free from radiologic and clinical signs of pulmonary tuberculosis. In nine of the students the sputum was found to contain bacilli that were resistant to acid and alcohol. Each of these nine suspected sputums were injected into two guinea pigs. Whereas in eight cases both guinea pigs gave negative results, in the ninth case one of the animals presented tuberculous lesions. The last-mentioned patient was kept under careful observation for three years but no signs of tuberculosis developed. The author further reports the results of investigations carried out on the sputums of eighty young soldiers who were free from clinical signs of tuberculosis. In this group again, one of the animals on which the sputums were tested showed tuberculous lesions. Observation of the patient from whom this sputum was derived proved that this was a convalescent carrier of tubercle bacilli. Later the author made a third series of systematic examinations on medical students and soldiers and he gives the clinical histories of the four who were discovered to be expectorators of tubercle bacilli. During the following year (1935) the author conducted a fourth series of investigations on sixty-five subjects who, on the basis of clinical and radiologic examinations, could be regarded as healthy. After citing some of the reports that other authors had published in the course of these years, he evaluates the different observations and opinions. He says that the detection of tubercle bacilli in the expectoration of apparently healthy subjects has given rise to two theories: (1) Either the apparently healthy subjects who expectorate the tubercle bacilli really have pulmonary tuberculosis, but in the form of lesions so small that they give rise neither to clinical nor to the roentgenologic aspects, or (2) it is an elimination of bacilli by a healthy pulmonary parenchyma without concomitant or consecutive tuberculous evolution. If the latter view is accepted, the origin of the bacilli remains to be explained. The author concludes that the phenomenon which is produced in the “healthy expectorators” represents in reality the first stage of pulmonary tuberculosis of the adult, which may or may not progress actively. From the point of view of the prophylaxis of tuberculosis the author says that “healthy expectorators” do not present a great danger.

## Presse Médicale, Paris

46: 1049-1064 (July 2) 1938

\*Vaccination by Means of Diphtherial Toxoid and Prophylaxis of Diphtheria. G. Ramon.—p. 1049.

New Conception of Mechanism of Death from Burns. L. Christophe.—p. 1054.

Prophylaxis of Diphtheria.—This report is dedicated to the fiftieth anniversary of the discovery of the diphtherie toxin by E. Roux and A. Yersin and to the passage of the French law (on June 2, 1938) which makes antidiphtherial vaccination with anatoxin obligatory. Ramon points out that fifteen years has elapsed since he first demonstrated that the diphtherie toxin of Roux and Yersin, by the simultaneous action of formaldehyde and heat, can be transformed into an absolutely inoffensive product, which retains its immunizing action. He

discusses the method of vaccination; namely, the dose, number and spacing of the injections, also the method of combined vaccinations, which is based on the employment of a mixture of two or several anatoxic vaccines, for instance, of diphtherial and tetanic anatoxin or even of antityphoid vaccine and of diphtherial and tetanic anatoxins. He shows that these associated vaccinations offer the double advantage of realizing several immunizations at one time with an increased efficacy for each of them. Further he reviews the influence of vaccination with toxoid on the morbidity and mortality of diphtheria in France and in other countries, showing that wherever anatoxin vaccination has been widely employed the diphtherial morbidity and mortality have greatly decreased. Finally he discusses the principles of and the practical indications for toxoid vaccination in the individual and collective prophylaxis of diphtheria. Regarding the law which makes antidiphtherial vaccination obligatory in France, he says that in his opinion antidiphtheria vaccination should be employed during the second year of life. Three injections should be given at intervals of fifteen days. A first injection of renewal is made during the sixth year. Concerning the associated injections he says that, since there is hardly any individual who from childhood is not exposed to the risks of tetanus, it is advisable to employ a mixture of diphtheric and tetanic anatoxins. In this manner, antidiphtheric and antitetanic immunizations are achieved by one series of vaccinations.

## Jahrbuch für Kinderheilkunde, Basel

151: 181-300 (May-June) 1938

\*Nature and Appearance of Influenza in Nurslings. J. Geldrich.—p. 181.

New Methods in Treatment of Pneumonia in Nurslings. Tuscherer.—p. 224.

New Cases of Pellagra in Children and Its Nosologic Position Among Acropathic Diseases. E. Mayerhofer and B. Dragišić.—p. 242.

Sulfur Metabolism in Developing Organism. S. Blazsó.—p. 253.

Alkali Content and Development of Milk. F. Goldmann.—p. 263.

Functional Examination of Sympathetic Nervous System by Means of Epinephrine Electrocardiogram. A. Nádrai.—p. 274.

Interstitial Nephritis Complicated by Nephritic Changes. E. Schmid.—p. 284.

Influenza in Nurslings.—Geldrich regards influenza as a disease which is caused by an ultrafiltrable virus but says that this virus infection is in the majority of cases secondarily complicated by a bacterial infection. This accounts for the two stages that can be differentiated in the clinical course of the influenza. The primary stage is caused by the virus infection, whereas the secondary stage is the result of the accompanying bacterial infection. Simple uncomplicated influenza of nurslings appears under two forms, the abortive one and the ordinary one. The complications of influenza can be classified into mild and severe forms. On the basis of two case reports the author discusses the forms with mild complications and the forms that take a chronic course. From the forms that have an anatomic basis he differentiates those that are of a purely functional character. The vital functional disturbances of influenza in nurslings are toxicosis, cardiac weakness, gastric and intestinal disturbances, hepatic and renal insufficiency and finally the disturbances of the central nervous system. Regarding the toxicosis the author says that, although in the majority of cases it is of bacterial origin, it may occasionally be elicited by the primary virus infection. Discussing the cardiac weakness, the author differentiates the fulminating form from the ordinary acute form. The fulminating form of cardiac weakness represents an almost complete collapse of heart and circulation, in which the usual cardiac stimulants fail and only the intravenous injection of strophanthin may still be of help. The acute form of cardiac weakness takes a less rapid course so that the organism usually still has time to develop its reserve powers and to mobilize its compensatory mechanism. In his evaluation of the gastrointestinal disturbances that occur during influenza in nurslings, the author says that in some of the milder cases the retardation in the intestinal activity is due to a temporary accumulation of gas in the intestinal tract or to an increased bacteriologic decomposition. These disorders are as a rule easily influenced. The severe forms, however, which are usually refractory to therapeutic measures, represent a more or less complete intestinal paralysis and frequently are a sign of imminent death.

## Pediatrics, Naples

46: 477-570 (June 1) 1938. Partial Index

Epidemiologic, Clinical and Statistical Study of Benign Scarlet Fever. F. Tecilazic.—p. 477.

\*Treatment of Epidemic Cerebrospinal Meningitis with Serum Prepared with Strains of Meningococcus from City of Epidemic Focus. A. Naccari.—p. 509.

Proposed Modification of "B" Alimentary Mixture (M. A. B.) G. Daglia.—p. 515.

Primary Tumor of Mediastinum in Child, Aged 7 Years. Santyan y Velasco Suello.—p. 542.

**Treatment of Meningitis with Serum.**—Naccari states that the therapeutic action of antimeningococcus serum depends on the amount of bacteriotropins contained in the serum and on the specificity of the bacteriotropins for a given type of meningococcus. Bacteriotropins are more specific for meningococcus of the type which is used in the preparation of the serum than for other types. The author reports twenty-one cases of epidemic cerebrospinal meningitis in infants and children of Palermo. The patients were treated with serum prepared with strains of meningococci which were isolated from patients in the same city. The serum was administered generally through the spinal route and in some cases through the ventricular route. It was given daily in large doses up to from 100 to 206 cc. and in rare cases 380 cc. The treatment lasted from eight to thirty days and in rare cases forty days. The treatment was discontinued when clear cerebrospinal fluid appeared. Early administration is important. Five of seven patients in whom the treatment was started in the course of the first week of the disease recovered. In the remaining patients in the group the treatment began from the tenth to the twentieth day of onset of the disease. In all the cases which ended in recovery the improvement was manifest following the first few injections. Twelve of the patients recovered. The author calls attention to the fact that the percentage of recoveries is twice as great in patients treated with antiserum prepared with local meningococci as in those treated with antiserum prepared with meningococci from other places. He points out the advisability of preparing the antiserum in different cities for local use.

## Radiologia Medica, Milan

25: 583-696 (July) 1938

\*A More Physiologic Technic in Cholecystography. R. Impallomeni.—p. 583.

Difficulties in Roentgen Diagnosis of Osteosarcoma: Cases. G. M. Massari.—p. 598.

Possibility of Errors in Method of "Thin Barium Layer" for Roentgen Diagnosis of Peptic Ulcer. M. Bermond.—p. 615.

Mechanism of Emptying of Gallbladder. A. Casati.—p. 628.

Clinical Study of Disease from Irradiations. A. Anzilotti.—p. 641.

Bronchiectatic Bronchiolitis: Clinical and Roentgen Study. C. Scarinci.—p. 666.

**Physiologic Cholecystography.**—Impallomeni points out the importance of stimulating bile secretion in visualizing the gallbladder in cholecystography. He followed the behavior of cholecystography as it was done by Graham's technic or after administration of an intravenous injection of a mixture of either bile salts or liver amines and the opaque substance. The mixture was prepared by adding either 10 cc. of a 20 per cent sodium dihydrocholate solution or 3 or 4 cc. of the preparation of liver amines to 30 cc. of the opaque substance. The author carried on his work in two groups of persons, normal and those with hepatobiliary diseases, the number not being specified. The tests were performed during a fast. The author concludes that when Graham's technic is resorted to the gallbladder of normal persons is visualized in two hours as a small clear shadow, the size and darkness of which gradually increase. Distention of the gallbladder and elimination of bile by the structure early in the course of the test do not take place. The gallbladder of normal persons is visualized within fifteen minutes in the course of the combined cholecystography by bile salts in the opaque substance. By the end of the first hour it is entirely visible. By the end of the second hour it is as clear as after eight or ten hours when Graham's technic is used. Bronner's test, after the administration of two or three egg yolks, empties the gallbladder in the same manner and length of time as Boyden's meal does during the Graham

test. Cholecystography by the combined method of liver amines in the opaque substances gives clearer and quicker results than those obtained by Graham's technic but more slowly than those obtained with bile salts.

## Klinische Wochenschrift, Berlin

17: 921-960 (July 2) 1938. Partial Index

Bacteria and Virus in Hypermicroscopy. B. von Borries, E. Ruska and H. Ruska.—p. 921.

Iron-Copper Antagonism in Blood Plasma in Infectious Processes. L. Heilmeyer and G. Stüwe.—p. 925.

Cardiac Action of Caffeine. M. Kiese and H. Gummel.—p. 927.

\*Vitamin C and Blood with Especial Consideration of Reticulocytes and of White Blood Picture. H. Barbier.—p. 928.

Evaluation of Oral Cholecystography. W. Lutz and H. Seyfried.—p. 933.

\*Treatment of Toxic Diphtheria with Vitamin C and Hormone of Adrenal Cortex. J. Dieckhoff and K. Schüler.—p. 936.

**Vitamin C and Blood.**—Barbier directs attention to reports by other investigators in which it was claimed that, following the administration of vitamin C, an increase in the reticulocytes is noticeable in the blood. However, he also cites an author who failed to observe this increase in reticulocytes following the administration of considerable quantities of vitamin C. In contradistinction to other investigators, he was unable to detect a greatly increased flooding out of reticulocytes into the blood stream following the intravenous injection of vitamin C. Further, he takes up the reports about the favorable effects of vitamin C on leukemia, pointing out that daily injections of ascorbic acid supposedly effected normalization of the leukocyte count in cases of myeloid leukemia. He then describes studies on the blood picture of three patients with lymphatic leukemia and of one patient with myeloid leukemia who were treated with a vitamin C preparation at his clinic. In all these patients he failed to observe a reduction of leukocytes following the treatment with vitamin C.

**Adrenal Cortex and Vitamin C in Diphtheria.**—Following a brief review of the literature on the combined administration of vitamin C and adrenal cortex extract in toxic diphtheria, Dieckhoff and Schüler say that since the summer of 1936 they resorted to this treatment also in the severe cases of toxic diphtheria. They employed it in addition to the customary serotherapy. They observed that the auxiliary hormone and vitamin therapy failed to influence the general condition, the development of myocarditis, the postdiphtheric paralysis or the mortality of patients with severe toxic diphtheria. In none of the ninety-three cases was it possible to observe an effect on the circulation, particularly on the impairment of the cardiac muscle. However, the hemorrhagic diathesis of toxic diphtheria was to a great extent prevented by the endocrine-vitamin therapy.

## Zeitschrift f. d. ges. experimentelle Medizin, Berlin

103: 503-670 (June 25) 1938. Partial Index

Investigations on Quantitative Porphyrin Metabolism in Healthy Persons and Patients. J. T. Brugsch.—p. 503.

Homologous Change of Viscosity and Sedimentation Effect of Colloidal Solutions. F. Frimberger.—p. 539.

\*Nutritional Edema and Its Origin. H. Luckner.—p. 563.

Pathology of Nutritional Edema. H. Luckner and K. Scriba.—p. 586.

Increase in Respiratory Minute Volume During Exertion and Reduced Oxygen Pressure. F. Kürten.—p. 622.

Histamine Content of Organs During Serous Inflammation. H. Kaunitz, R. Neugebauer and E. Schweiger.—p. 627.

**Nutritional Edema.**—Luckner says that the food taken by persons who acquired nutritional edema had a high fluid content but was deficient in caloric value; the protein and fat contents were low, while the carbohydrate content was relatively high; the mineral content was generally high but the vitamin content was low. It was suggested that, in addition to the caloric insufficiency of the diet, the lack of a certain essential constituent in the diet might be responsible for the pathogenesis of nutritional edema. Some suggested that deficiency in fats was the causal factor, while others suggested protein deficiency or lack of vitamins. By an inadequate diet he produced nutritional edema in rats and then compared the symptoms in these animals with those in human subjects. He was able to demonstrate similarity in the essential points. In studies on the

etiology of nutritional edema, he found that the addition of vitamins A, B<sub>2</sub>, C and D has no influence on the formation of edema. The addition of vitamin B<sub>1</sub>, however, retards the development of edema. This retardation is explained by the significance of vitamin B<sub>1</sub> for the processes of resorption in the gastrointestinal tract. In feeding the animals with rations consisting chiefly of carrots and turnips, edema formation follows regularly. After prolonged feeding with cabbage, edema develops occasionally; but in the course of feeding with kohlrabi, edema was never observed. By adding 0.5 per cent of casein to the basic diet of carrots, edema can be prevented and slight growth can be observed in the animals. If only 0.25 per cent of casein is added, edemas develop after from ninety to 100 days. The addition of the amino acids aminoacetic acid, asparaginic acid, tyrosine and tryptophan has no influence on the pathogenesis of nutritional edema. However, edema formation is prevented by the addition to the food of small amounts of cystine and glutathione. The efficacy of cystine is probably due to the fact that the cystine content of the protein of the basic diet is inadequate for the formation of the plasma protein. The decrease in the colloid osmotic pressure connected with this deficiency of plasma protein results in the formation of edema. In summarizing the observations, the author reaches the conclusion that nutritional edema is caused by malnutrition with biologically deficient protein. By causing a disturbance in the resorption of food, deficiency of vitamin B<sub>1</sub> may accelerate the appearance of the edema.

### Sovetskaya Psikhonevrologia, Kharkov

14: 1-111 (No. 2) 1938. Partial Index

- The Hertwig-Magendie Phenomenon in Nervous Pathology and Its Diagnostic Significance. V. M. Slonimskaya.—p. 3.  
Trophic Functions of Premotor Area of Cortex of the Brain. O. S. Valshonok.—p. 9.  
Pathophysiology of Synkinesis of Immitation. S. I. Rotenberg.—p. 29.  
Spinal Arachnoiditis and Its Surgical Treatment. Ya. M. Pavlovskiy.—p. 36.  
\*Hemangioma of the Vertebral Column. I. S. Rosentsweig.—p. 47.

**Hemangioma of the Vertebral Column.**—According to Rosentsweig, hemangiomas of the vertebral column are benign vascular neoplasms developing frequently on the basis of a congenital anomaly of the vascular system. The great majority of these tumors are found accidentally at necropsies. Hemangiomas only rarely give rise to clinical manifestations. They are capable, however, of producing a clinical picture of compression of the spinal cord. Of the five patients observed by the author, four presented symptoms of spinal cord compression. The diagnosis of hemangioma of the vertebral column is possible only on the basis of roentgenologic examination. Hemangiomas causing compression of the cord may be treated by operative intervention or by roentgen irradiation. The former has a higher mortality because of profuse bleeding. Roentgenotherapy has been widely used in this condition with gratifying results. The author reports a cure in three of his four cases so treated and an improvement in the fourth.

### Acta Medica Scandinavica, Stockholm

96: 1-104 (June 30) 1938

- Three Synchronized Leads Between Fixed Points on Heart Projection on the Chest Wall. G. Nylin and T. Sällström.—p. 1.  
So-Called Arthropathia Mutilans. E. Jonsson.—p. 28.  
\*Etiology of Chorea Minor. G. Edgren.—p. 43.  
\*Arterial Hypertension and Vasopressor and Gonadotropic Hypophysial Hormones. A. van Bogaert and F. van Baarle.—p. 56.  
Transplantation of Hypophysial Tissue in Treatment of Late Puberal Emaciation. E. Kylin.—p. 75.  
\*Diagnosis of Myocardial Infarct with Aid of Thoracic Leads. R. Langendorf and A. Pick.—p. 80.

**Etiology of Chorea Minor.**—Edgren points out that the most widely accepted opinion on the etiology of chorea minor is that it has some connection with a rheumatic infection. Bacteriologic examinations of the brain, the spinal fluid and the blood of patients with chorea minor have yielded diplococci, staphylococci and streptococci. The pathologic-anatomic aspects of the brain vary; embolisms, congestion and small hemorrhagic foci have been observed. Moreover, attacks of chorea minor have been known to alternate with attacks of acute polyarthritis or endocarditis, and infections of the throat,

measles, scarlet fever and influenza have been suspected of a connection with chorea minor. Other investigators have suggested dysfunction of the parathyroids and psychic or physical traumas as causal factors of chorea minor. The majority of investigators regard hereditary predisposition as an important factor in the development of chorea minor and the author himself reports the case of a girl with chorea minor who had three siblings who were also subject to these attacks. Moreover, the mother of these siblings had had attacks of chorea gravidarum in the course of several of her pregnancies. Discussing the erythrocyte sedimentation speed of patients with chorea minor, the author says that in a large percentage of these patients it is either normal or slightly increased. He reaches the conclusion that the etiology of chorea minor has not been fully explained as yet. Many factors indicate that chorea minor is not a definite disease entity but rather a syndrome with various etiologies. Hereditary predisposition probably plays an important part in the etiology.

### Arterial Hypertension and Hypophysial Hormones.

Van Bogaert and van Baarle point out that in recent years several investigators have attributed an important role to the hypophysis not only in eclampsia but also in certain forms of hypertension. After reviewing some of the studies on the presence of hypophysial hormones in the cerebrospinal fluid of patients with pregnancy toxicoses or of patients with hypertension, they report their own investigations. They aimed to determine whether in patients with hypertension the cerebrospinal fluid contains (1) the gonadotropic principle of the anterior hypophysis and (2) a vasopressor principle of the posterior hypophysis. They examined the cerebrospinal fluid of nineteen patients. They do not feel justified in drawing generalizing conclusions from their observations on a comparatively small number of patients, but they observed that the cerebrospinal fluid of men or women near the menopausal age, with or without signs of renal insufficiency or signs indicating impairment of the arterial system, did not contain hormones in a quantity sufficient to elicit maturation of ovarian follicles in impuberal mice or rats. On the other hand, in a case of eclampsia in which hypertension was accompanied by signs of ovarohypophysial dysfunction such as obesity and hypertriehosis, the cerebrospinal fluid had folliculizing power. The questions arising from these observations are whether the presence of folliculinizing hormones in the cerebrospinal fluid of the second type of subjects is not directly related to their dysendocriniasis and whether hypertension is only an accidental phenomenon in these cases. In further studies they aim to show that only those patients with hypertension who also have hypophysial disorders have folliculinizing substances in their cerebrospinal fluid. They think that patients with simple hypertension have neither folliculinizing nor vasopressor substance in the cerebrospinal fluid.

### Thoracic Leads in Diagnosis of Myocardial Infarct.

Langendorf and Pick studied the electrocardiographic records of forty-four cases of myocardial infarcts of the anterior wall and of twenty-three cases of the posterior wall. They compared the electrocardiographic records in which the leads were taken from the extremities with those in which thoracic leads were employed and found that among the cases of myocardial infarcts of the anterior wall, and rarely also among those of the posterior wall, there were some in which only the thoracic lead permitted a diagnosis, whereas the leads from the extremities revealed either no changes indicative of myocardial infarct or such changes as were not sufficiently characteristic to permit a diagnosis. Conversely, there are rare cases in which thoracic leads fail to disclose a myocardial infarct of the anterior wall, whereas the classic leads (extremities) reveal the characteristic aspect of myocardial infarct. From these observations the authors conclude that the leads from the extremities and from the thorax are complementary and that it is erroneous to think that the thoracic leads alone are sufficient for the diagnosis of infarcts of the anterior wall and the leads from the extremities for the diagnosis of the infarcts of the posterior wall. To be sure, they admit that in individual cases of infarcts of the anterior wall the thoracic leads are frequently superior to those of the extremities.



# THE STUDENT SECTION

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## A School Health Program

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The greatest public health problem of this country is to supply adequate medical care to the people. This is not a problem of any one social, geographic, economic or age group. It is universal. Studies made by various agencies all reveal the need for more and better medical care. The condition is a challenge to the public health and medical authorities. It is not my purpose to discuss the various proposed and attempted methods claimed to afford a solution of the condition, nor is it my purpose to do more than superficially analyze certain aspects of the problem. But I shall point out one of the ways whereby, here in Detroit, we are meeting this need.

There are in this community more than two thousand physicians licensed and qualified to practice medicine for nearly two million people. There are hospitals, dispensaries, welfare agencies, city physicians and various social and political arrangements all aimed at supplying medical care to the various groups at a price they can pay. There are enough doctors, there is enough wealth. There is enough ability to render good medical care to all at all times. People should have a doctor whenever they need one, whether that need is for alleviation of suffering, prolongation of life, cure of disease or prevention of sickness and preservation of health. Yet this utopian state of health, this ideal condition of the practice of medicine, is far from being reached. Why is it that we have a community with enough of everything medical and with a fair amount of wealth, and yet on the one hand many are without medical care and on the other the talents and skill of physicians are wasting because of lack of patients? Why is there needless sickness and premature death? Why are physicians denied their opportunity to serve?

There can be no simple answer. No single explanation will suffice, nor can any revolutionary change in methods of practice guarantee the desired results. It is certain, no matter what

the whole picture may present, that one phase of the problem has to do with education. This is one of the basic, fundamental points. If the people knew the real value of medical care; if they but knew the need for utilization of the skill and abilities of physicians as applied to their own case; if they knew how, when and where to secure such care; if they knew the value received by buying and paying for medical services, then most assuredly our problem would be brought much nearer solution. The details of distribution of services and compensation for them could be more readily worked out if the people only knew what, when, why and how they should buy medical care. As a result of this lack of knowledge the problem, then, becomes one primarily of education. Our schools are the places which provide education. Hence, develop a school program and at once the whole thing is done. So simply stated, so easily perceived but so very difficult to achieve!

Time does not permit of delving into the history of more than four decades of school health work in this country, interesting as it might be to do so, nor can I any more than point out some of the obvious failures that have resulted from having certain types of medical services and health programs in our schools.

### HEALTH SERVICE TO CHILDREN

Everything that is done in the schools has a certain educational value, just as every living experience of the child develops certain attitudes toward life and initiates or establishes certain practices and habits. Let us look briefly at some of the practices and analyze their end results. In many states and cities, school work has been highly developed along lines of service to children. The most casual inspection revealed children in need of medical care. Teeth were decayed; tonsils diseased; eyes, ears, hearts, lungs all needed medical treatment; children were without protection against diphtheria and smallpox. In short, children were in a bad way.

The World War reemphasized this condition. More and more money was poured into school medical services; more teeth were pulled and repaired, more examinations done, more eyes refracted; chest clinics and heart clinics were established; and so on through the whole gamut of the practice of medicine. The health of the next generation of adults had to be improved and protected at any cost. All this was very laudable, but what happened? As the result of parent-teacher association activities, summer round-up campaigns were inaugurated for youngsters about to enter school. In droves by the hundreds of thousands they were taken to school to have their physical examination by the school doctor or well intentioned private physicians; states passed laws compelling the schools to give annual or periodic examinations to all school children. The schools vaccinated all children because of compulsory vaccination laws; diphtheria prevention treatments were as much a part of the school routine as reading or writing instruction; preschool children, as well as adults, were urged to utilize these immunization clinics; extensive dental services were introduced; nurses, health teachers, gymnasium instructors, science teachers all told children what to eat, how and when to sleep, what to wear, how to play and exercise; we brushed the teeth and blew the noses for the children, all in the name of health education. And what happened? Maybe we did save lives, maybe we did remove tonsils, get glasses, repair teeth, cause children to gain weight, but what did we teach in respect to health? We taught the child and his parents to turn to the school as the source of all health guidance and counsel. We created a dependency on this arm of the state in respect to health. We assumed a load of obligations in the school too great to carry. There developed a distrust and disrespect for school physicians which undoubtedly, in the minds of the public, was directly transferred to no little extent to a distrust and disrespect for all physicians. We taught the child to depend on a type of service that was to be denied him when he was graduated from or left the schools. We were trying to treat a symptom of social sickness and not the cause. The defects of children, and not the cause of these defects, received our attention. We were engaged in a mopping-up process and not a prevention program. It was not until recently that a realization of all this has been effected. It was not until recently that any real effort has been made to use common sense in our school health programs and really teach both the needs of medical care and the means of securing such care. Detroit has pioneered in this field. Detroit is attempting to attack the basic health problem through education. The school, the public health authorities, the medical men have united in their efforts to establish a sound program.

If the people know the need for medical care, if they know where and how to secure it, and if they are given good value for the money they spend, the problem would be largely solved, even to the care of the medically indigent. Tax and charity supported institutions and programs will be inaugurated and operated for the needy if the people know the value of medical care. Tax appropriating bodies cannot afford to refuse the demands of an intelligent population; they cannot afford to refuse adequate compensation for medical services to indigents.

When the problem is looked at from this point of view, school health service and school health education programs become something far more than looking after a comparatively small section of the population. Then, truly, care and thought must be put into the health plans for the schools if our objective is to be education of the community in order to have complete medical care rather than merely building an emergency service for children of school age.

#### TEACHING THE NEED FOR MEDICAL CARE

Let us trace the activities of the Detroit schools in respect to certain of their services and see how well they fulfil their obligation to teach people the need for medical care as well as how to secure such care in our community as it is organized today. There is first the physical examination program. During the past few years physical examination blanks have been given to all the children entering a school for the first time. In certain of the schools and at the kindergarten and first, seventh and tenth grades, such blanks are given to all children in the class. These are designed for use by the private physician in order to allow him to report to the school the essential points about which the school has need to be acquainted. The school must know certain things about the children in order to conduct properly its teaching program and activities with the maximum efficiency and with the least possible danger to the individual child. Particularly must the school know about the hearing, vision, heart, nutrition and general health of each child. But it needs to know about such things as orthopedic defects and hernia if the child is to be a candidate for athletic activities. It must know about the communicable disease history and protections if groups are to be placed together and still be assured of a minimum of contagion and pestilence. For the child's own good, early defects must be discovered and corrected. These are all sound practices—and these reasons have allowed schools the world over to employ school physicians to make the necessary periodic physical examinations; but again let it be emphasized that when the school makes this examination it but teaches the child to turn to the school for this service. If it is granted that such an exami-

nation is advisable, it must also be admitted that the best place to secure such an examination is at the hands of the man who is to give continued and additional advice relative to this child and his health, and from one who is ready and able to carry out any corrective procedures that might be indicated by the examination. This means that the examination should be done in the office of the child's own physician—be that private physician or clinic. The question has been asked "Why not make such an examination compulsory? Compel every child to go to his own doctor for such services. If it is good for one, it must be good for all." The answer is simply that this is a program of education. You cannot compel people to learn nor can you compel them to live a healthy life. Compulsion would do more to defeat the plan than would having the services rendered all children every year in schools by state or city employed school doctors. We want to teach the people to go to doctors for services they want because they think and know that these services are worth while. Last year more than 20,000 children went to about 1,500 physicians for their own school examination. There is no means of computing the amount of money spent for this or the ultimate amount of good that was done and will continue to be done for these children. During the present year it is to be hoped that this number will be increased by at least half; 35,000 children served by their own doctors because that many children and their parents have been convinced that such services are worth seeking.

This by no means represents all the vast number of children who should have such care—that would be all of the more than 330,000 children in the public and parochial schools. But for the rest a different technic is used—they are the ones from families who do not think this is worth spending money for. The school teachers here play their part. For the past sixteen years the teachers in Detroit schools have been engaged in conducting a special examination of their students. We all appreciate the need for teachers and schools examining children as to their knowledge and educational advancement in reading, writing and spelling, but it is not so universally appreciated that schools need to conduct the same sort of examination of the children in respect to their health knowledge. If a child knows enough to go to his own physician and return to school a report of the results—that child "passes"—he is examined no further by the teacher. But for the remainder there is no measure of their health practices and knowledge unless some type of examination is made. Hence, each year the teacher inspects all the other children for the presence of certain physical defects—vision, hearing, teeth, tonsils, cervical glands, thyroid, posture, nutrition, skin. She has been trained to do this inspection the

same as she has been trained in other methods of educational diagnosis. She wants to find those children who have failed to look after their own health. She wants to find those who need special education. This she can do. Accept my word for it that her work is highly accurate, that she is not doing medical staff work but merely that of a school teacher. Those children who are found to have gross defects that apparently should be in the hands of a medical man are subject to a second type of examination aimed at measuring their knowledge of good health practices. Remember, this teacher is not primarily concerned with the discovery of pathologic conditions but with children who are in need of medical attention and who do not know the need of it or who do not know how to get it if they do realize the need. If the child has an obvious defect and is actively under the care of a physician for that particular fault at the time, there is nothing more that the school needs or can do about it. But if those defective eyes, ears or tonsils or if that faulty nutrition or thyroid is not immediately under a doctor's care the school is almost compelled to do something about it, for here is a very important fault in the education of the child and his family—here is a child in a family that does not know there are things medical needing to be done which can be done. The parents are invited to come to school to discuss the health of this child. Thus far the teacher is on safe ground, for she has been dealing with observation of facts. But the minute she attempts to tell parents what should be done about the disease and health of the child she steps over into the field of the practice of medicine. This she cannot do; hence physicians are employed to meet with these parents who have been invited to school to discuss the health problems of their own children.

#### EDUCATIONAL TASK OF THE PHYSICIAN

The school physician takes up the educational task at this point. He meets from ten to fifteen parents in a morning. He examines those children who have been shown by the teachers to have physical defects for which they are not receiving medical care. He demonstrates these defects to the parent; he points out the need for medical care and, what is most important, he carefully instructs the parents how to secure such care. It is not his task to give the care or even to advise the kind of care needed. He is concerned with pointing out the need for and way of securing care. This advice cannot be routinized in any manner—it must vary to meet the individual situation. Usually it consists of telling the parents to return to their regular attending physician. At times, for certain classes of patients, it consists of discussion of the proper use of free clinics. Again it may be made up of an explanation of one or more of the various plans set up by the Wayne County

Medical Society, the city or the state to assist people in securing medical care. His work is purely educational—education given by members of the medical society, directed at those very persons who, as the result of the teacher's diagnosis, are found to be in need of such directed teaching.

A word about these school physicians. They are for the most part young men and women—graduates of the best schools—having had the best of hospital training and well recommended by their fellow practitioners. They are in no sense of the word political appointees. They must meet the highest standards of training and personality, for they are placed in schools to represent the practice of medicine to the very group that needs to be convinced that medicine has something to offer them. These school physicians are appointed to the staff for a period of but two years, approximately one hundred of them serving at any one time, fifty new to the work each year. This rapid turnover is deliberately done in order to acquaint an ever increasing number of physicians with the needs of the school child, with the vast amount of corrective work that must be done, with the methods of "selling" medical services to parents who are reluctant for one reason or another to have such service, and to acquaint the practicing medical profession with the facilities of the school aimed at furnishing an education for the handicapped children.

#### CONTROL OF COMMUNICABLE DISEASES

The control of communicable diseases in school has long been one of the major problems of the school health staff. When the situation is looked at in a fair, impartial manner it must be admitted that much of the effort that has been expended in the past has been entirely wasted. It was for the purpose of control of contagion that physicians were first placed in schools about a century ago. But contagion went merrily on its way. The theory used was all wrong. To place an army of doctors and nurses in school to detect sickness after it had occurred and after the child had come to school can be of no avail, for we are dealing with contagious and communicable conditions. The sick child has no business in school. Yet this simple thought does not seem to have been appreciated until a late date. In fact, today it is the exceptional school system that does appreciate it. The child who comes to school with any form of sickness represents a family lacking in knowledge of how to care for the child and how to act best to protect the health of the public. Placing a staff of diagnosticians in school would only tend to increase the desire of parents to send their sick children to school. Why shouldn't they send the child to school to find out what is wrong with him? But the minute that is done there is the start of a new epidemic. The sick

child does not belong in school. Parents can be taught to keep such children home. When they do slip, it is the duty of the teacher to detect such slips as indications of the need of further education. Because of this need, teachers conduct an inspection each morning of their students. This is not a formal medical examination but merely observation of the children to see whether any are sick. If there are such they are sent to the school nurse, who passes on those that show signs of communicable disease. These children are then taken home; an explanation is given the mother as to what she has done to her child and how she has exposed other children of the class. Further, it is the duty of the teacher or of the nurse who takes the child home to instruct the mother what she should have done—how she should have called in medical advice before sending her child to school in an obviously ill state. She is advised to call in her own physician for treatment, but the school, through the board of health, sends a diagnostician to the home as soon as possible so as to establish immediately a true diagnosis and allow for the prompt institution of control methods within the school. Much criticism has arisen over this point. We seemingly are working at cross purposes here. The school and the department of health should not have to interfere with the physician-patient relationship. But parents who thoughtlessly and needlessly send a child who has scarlet fever, measles, whooping cough or any other communicable condition to school cannot be trusted too far. They cannot be expected to do the entirely right thing of immediately calling their own physician for all too frequently the child does not appear too sick. He has either a very mild condition or a very early stage of a serious state. Obviously the former is usually the fact, for the child did not feel too sick to go to school. And the school must have an immediate report—delay of a day may mean the development of a serious outbreak. The only alternative to sending a physician to the home of every such case would be having one in school (as is still done in many cities), and this would take us right back where we started—teaching the people to turn to the school for medical diagnoses and advice.

#### IMMUNIZATION

I need no more than mention the other phase of communicable disease control as carried out in our schools—immunization. We are entering the tenth year since a dose of diphtheria prevention treatment—toxin antitoxin or toxoid—was given in any Detroit school, yet nearly 90 per cent of the school children have had one or more series of treatments. Diphtheria has ceased to be a major threat and has become so since we discontinued diphtheria immunization as a school project. As long as the school engaged in administering these treatments just

so long did the people turn to the school for this type of care, and as long as they turned to the school just so long did they neglect to have the preschool children protected. Thus in the year before our present method was established there were more than 100,000 school children given protective treatments. But there were also 450 deaths from diphtheria—most of them of preschool children. Through our well intentioned efforts we had advertised the need of protecting the school child against diphtheria to such a point that the preschool child was neglected. In the minds of the people there was the thought that this was a disease of the school age, for if it were not so then why did the school pay so much attention to it and why did the school see fit to set up elaborate and expensive clinics for its control? Hence the rank and file of parents waited until their children were in school before granting them protection. The result was 450 deaths a year. Now we are greatly perturbed because during the year just passed there were a few more than twenty deaths of Detroit people. There were no more because parents have learned to take this responsibility on themselves—because parents have taken their children, long before school age, to their own doctors for protection. Diphtheria has not been eradicated, but it has been controlled in a way that would not have been possible if mass immunization programs were carried on in the schools.

So too with smallpox. While we have not completely eliminated the vaccination of children in our schools, the amount of service has been greatly reduced. Each year that which is done in the schools is less and less. Education of the parents as to the need for vaccination—education of the parents as to how to secure this service—has left but 5 per cent of the entire school population to be cared for by the school doctors.

Schools no longer are the place of epidemics that they once were. While it is not possible to eradicate disease of a communicable nature completely, the number of cases has been reduced most markedly. Parents have learned to keep their children home when sick. They are learning to call in their own doctors; children are protected by their own physicians against certain diseases, not because the children are forced or herded into this action but because they and their parents know that this is the cheapest and safest course of action to follow because they and their parents have learned that money spent for this type of service returns large dividends both in health and in money.

The modern concept of school health programs cannot for a moment stop or start with the four walls of the school. Schools are but a part of the community. The value of the school and its educational program depends on how

well they are focused on community needs. School health studies, the examination of children, measuring the amount of communicable disease, and the amount of disease prevention treatments that have been given but reflect the needs of the entire community. If we find that 8 per cent of the students are in need of dental care, then we have a community lacking in adequate dental care for the rest of the population. If there are a large number of pupils with uncorrected vision in the school, then we have a community with need for additional attention to the eyes. The proportion to which defects are found in school children reveals the thinking of the community. School children are but samples of the population and show the level of health education operating in the home. When the school looks on its health problems as being expressions of lack of appreciation of the value of good medical services, then a real challenge and a real opportunity are afforded the health and medical authorities.

The school is not an organization set apart from the rest of the social structure; the cultural, educational, social and health backgrounds of the component families determine the school needs. Obviously, if this is true only the most superficial effort is made to secure improved living if the activities are limited to the school itself. The poor health conditions of school children are symptoms of community ignorance of good health practices.

#### OBTAINING COOPERATION OF PRACTICING PHYSICIANS

Not only does the school need to educate its students and teachers, but its program should be aimed directly at reaching others not ordinarily considered as an integral part of the school system. One of the most essential community agencies is the medical profession as represented by the practicing physicians. When there is antagonism existing between private physicians and the school doctors, dentists, nurses or teachers, then the school is in error. When such a condition unfortunately exists, the school has failed to elicit the cooperation of the very group charged with the responsibility of health supervision and care. There can be no misunderstanding on this point. The physicians who object to and fight against the school and its practices may in individual instances be wrong, but the error rests with the school in not preparing these physicians to play their role and in not including them in the picture. It is in error in not taking their problems, rights, and points of view into consideration. Physicians will approve and assist in the school health program when they understand its aims and objectives, together with the various steps taken in achieving these ends. They will lend their full support when the school refrains from doing those things that should be, and can well



be, cared for by the practicing physicians of the community. They will aid the school in carrying out those phases of the program that can be handled only on a group basis, when they are afforded an opportunity to see that it is only through such methods that the general health practices of the community can be raised.

To this end here in Detroit we have taken a long step forward. No longer are the health department and the board of education the only groups concerned with building and carrying out school programs. I wish to pay tribute to the wise policy of actively including the Wayne County Medical Society in the picture—included not merely as a figurehead but as an active planning force, a group originating ideas, a group carefully measuring and considering the effectiveness of the steps that have been taken. To the School Health Committee, as a part of the Medical Economic Commission, goes the

credit. This committee has been not merely a buffer to shield the director of school health service of the Detroit Department of Health, as has been occasionally charged; it is rather a committee composed of representatives of various branches of the practice of medicine, well leavened with training in the science and art of public health, working out details of programs as well as main ideas. Further, it is the task of this committee to see that the practicing medical group knows what the plans are and in what way it can assist in carrying out these plans. Thus there is more nearly certain assurance that not only will the health needs of Detroit's school children be met, not only will the level of health practices be raised for the entire community, but also that in so doing the practicing physician will be afforded wider scope for service with all the concomitant benefits accruing to him.

## Comments and Reviews

### SURVEY OF TUBERCULOSIS AMONG MEDICAL STUDENTS

Many reports have appeared from student health services of universities indicating that tuberculosis is the main occupational hazard of medical students. In a survey, the Tuberculosis Committee of the American Student Health Association found that in the school year 1934-1935 the incidence of tuberculous disease was 5.7 per thousand in seventeen colleges having an active program for the detection of tuberculosis. In three colleges having no programs, with an enrolment of 13,000 students, the incidence of tuberculous disease was 1.2 per thousand.

At the University of Minnesota, Myers found that about 100 per cent of the graduating classes of the schools of nursing and medicine had positive tuberculin reactions. Less than 50 per cent of the other schools of the same university fell in the same category. Soper and Wilson studied the students entering Yale in 1931. Of the undergraduates, 53.3 per cent reacted to tuberculin; 67.7 per cent of graduate students reacted. Of the latter, those entering law reacted in 57.8 per cent; those entering medicine reacted in 76.9 per cent. At the University of Wisconsin, Stiehm studied the tuberculin reaction of all students enrolled during the school year 1933-1934. The average incidence of positive reactions was 29.9 per cent, while among the medical students 44.7 per cent of the freshmen and 55 per cent of the seniors had positive tuberculin reactions. At the University of Pennsylvania in the school year

1930-1931, tuberculin testing showed that there was an average of 85.6 per cent positive reactions among undergraduate students, while the medical students averaged 93.6 per cent positive reactions, with a steady increase from 84.8 to 98.2 per cent in the successive four years.

These surveys show that medical students acquire tuberculous infection to a greater extent than do other students.

### ACTUAL TUBERCULOUS DISEASE

Soper and Wilson studied the entering class of 1,644 students at Yale in the fall of 1930. Among the forty-four entering medical school, 4.5 per cent showed latent adult type tuberculosis while only 1.3 per cent of the rest of the students showed a similar condition. At the University of Pennsylvania in 1930 the incidence of obvious pulmonary tuberculosis among medical students was found to be 1.02, 0, 3.1 and 7.4 per cent for the four years. In the school year 1935-1936 at Pennsylvania, 1,024 students were roentgenographed in the undergraduate and graduate schools, uncovering six cases of pulmonary tuberculosis (0.58 per cent). In the medical school in the same year the incidence was 0, 0.8, 8.02 and 12.8 per cent for the four years, the average being 5.8 per cent.

At the Phipps Institute the incidence of apical tuberculosis among college students of ages 17-21 varied from 1.5 to 6.7 per cent. Among the medical students between the ages of 21 and 26 the incidence varied from 4.9 to 30.3 per cent, with a steady progression with age. Another survey by the same group of men showed that the incidence of apical tuberculosis in medical students varied from two to five times that of dental and law students.

In comparison are statistics gathered from a questionnaire which the committee sent to all medical schools in the United States. The incidence of positive tuberculin reactions among students in medical schools in the East showed a definite increase throughout the four successive years. The percentage of positive reactions in the first year classes varied from as low as 20 to as high as 85. In the graduating classes of the same schools the percentage was in all cases greater than 80, the average being 91.5. Reports from the Middle West indicated that the average would fall at not greater than 50 per cent for the four years. No results were obtained from the Far West. In the South the average for four years exceeded 60 per cent, the tendency being for higher rates to be reported from the sea coast district and lower rates from the mountains. These results substantially agree with those previously recorded as to three factors: (1) the high incidence of positive tuberculin reactions among medical students, (2) the progressive increase of tuberculin reactions with successive years of the medical course and (3) the high incidence along the Atlantic coast and lower incidence in the Middle West.

In four Eastern schools with adequate programs for detection of tuberculosis, the incidence increased steadily from the freshman to the senior class. The minimum incidence was 0 per cent, which occurred only in freshman classes. Three of the four reported the maximum incidence in the senior year. The average for these three schools was 7 per cent for the senior year. Figures from New England, the Middle West and the South showed little progression from year to year as the percentages were quite low in each class. A representative figure is that of the University of Michigan, where over a period of years the average incidence has been 0.52 per cent for the freshman class and 0.42 per cent for the senior class, the average for the four years being 0.36 per cent.

The situation is alarming. The statistics given are those of schools where the most reliable programs are in operation. Undoubtedly the incidence in medical schools in general is not nearly this high, but statistics as furnished by some thirty schools could not be included because of their incompleteness. On the other hand, many of the schools have no adequate program for the detection of tuberculosis, and it is fair to assume that those schools from which replies were not received are to a large extent delinquent in this matter.

#### PREDISPOSING FACTORS

In a study of this sort it is necessary to discover whether it is the individual or the environment which differs from the normal. The questionnaire issued by the committee

included requests for information about any correlation found between the development of tuberculous disease in any given individual and the family history, the individual history, the extracurricular work and housing facilities. One school found a correlation of 18 per cent between the family history and the development of tuberculosis in its students.

There were no reports which would indicate that a preexisting lesion was definitely a cause of tuberculosis in the same student while in medical school.

Six schools reported a tendency for extracurricular work to have a part in tuberculosis in medical students. One school reported that 60 per cent of the cases of tuberculosis were in students who did extracurricular work.

Less than one fourth of the schools reported that they have control of housing facilities for the students, which includes adequate health inspection of the proprietors and other employees. The remaining three fourths have no control over housing facilities. Only one of the schools had compulsory physical education.

Thus far there is no evidence on which to base a belief that predisposing factors have an important part.

#### SOURCES OF INFECTION

The committee feels that there is sufficient evidence indicating that, at least in the group under discussion, exogenous reinfection is extremely important. Of the sources of infection that have been suggested, the most important are contact with tuberculous patients and classmates, necropsy rooms, boarding and fraternity houses. In addition, bacteriology laboratories have also been indicated.

Dr. Stiehm at Wisconsin reports that among nineteen girls living in a sorority house one had been troubled by a cough for three months before consulting a physician, who then discovered that she had far advanced tuberculosis. Fifteen of the other eighteen reported for tuberculin tests, and of this group eleven had been previously tested and were negative. Of the eleven known negative reactors 100 per cent were now positive. The one individual showing a negative test had been living in the sorority house for only two weeks. Two of these girls subsequently showed active lesions, necessitating withdrawal from school.

In a report by Diehl and Meyers at the thirty-second annual meeting of the National Tuberculosis Association, contact with other students and exposure to tuberculous patients were felt to be the important factors in a study of the case histories of students who had acquired tuberculosis.

#### DIAGNOSIS

Physical examinations are not sufficient to diagnose early cases of tuberculosis. A routine

case-finding program is indicated if early cases are to be disclosed. In a survey made by this committee of methods used in colleges and medical schools, some procedures were suggested which should be included in the ideal case-finding program. Such a program should include the Mantoux test or some other method of testing sensitivity, x-ray examination of positive reactors at periodic intervals and retesting of negative reactors at periodic intervals, followed by x-ray examination if they become positive. Any person having roentgenographically demonstrable lesions should be further studied by laboratory methods with regard to the sputum, blood sedimentation rate, differential blood count, temperature variation and gastric contents.

Forty-one of the seventy-seven medical schools to which questionnaires were sent have responded. Of the forty-one schools, twenty-eight have an active program. Of the twenty-eight schools having a program, it is available to every student in each school. In twenty-one of the twenty-eight it is compulsory. In the remaining seven from 33½ to 100 per cent of the students availed themselves of the service, indicating that medical students too are blind to their own advantage.

Thirty of the schools have a student health department which, in twenty-six cases, administers a tuberculosis program. All the student health departments carry out routine physical examinations each year on entering freshmen, and some on all four classes. Seventeen of these departments apply tuberculin tests to entering freshmen. In all but two, negative reactors are retested periodically. Seven carry out the retest at yearly intervals, three at four month intervals, and the rest repeat the test in the senior year or at irregular intervals. One school, instead of using the Mantoux test as a filter, roentgenographs all the entering freshmen, while another school uses the fluoroscope as a routine in the same manner.

X-ray examination is applied in twelve schools to all freshmen before attending classes. Three additional schools roentgenograph their tuberculin positive freshmen. Six other schools roentgenograph all students each year, and one applies the fluoroscope in the same manner. Fourteen schools roentgenograph all tuberculin positive students every year and fourteen schools roentgenograph all new tuberculin reactors as soon as the reaction becomes positive. Six schools apply the x-rays during the senior year to the graduating class.

Data gathered at the University of Pennsylvania show that when symptoms were regarded as a sufficient warning 32 per cent of the cases were incipient, 55 per cent moderately advanced and 13 per cent far advanced. With the insti-

tution of routine chest roentgenograms an additional 60 per cent of cases were diagnosed in the incipient stage.

#### PROPHYLAXIS

Prophylaxis of tuberculosis, with particular reference to medical students, is dependent on elimination of all sources of infection as far as possible and general hygiene of the individual. Medical students should strive toward better care of their physical well-being. The student in whose family there is any history of tuberculosis should be especially careful.

To eliminate exogenous sources of infection, the removal of the tuberculous student is important. Of utmost importance is the prevention of infection in the clinics and dispensaries. Myers of Minnesota, and others, advise aseptic technic in the handling of all sputum positive patients just as in handling any other contagious disease.

More sanitary methods would not be amiss in the necropsy rooms: more careful handling of infected organs; disinfection of gowns, gloves and tables, and possibly the wearing of masks by the student during necropsies in advanced cases of tuberculosis.

Boarding houses and fraternity houses should be investigated with reference to tuberculosis among the employees.

In the bacteriology laboratory the use is recommended of nonpathogenic strains which are available for culturing, the use of killed cultures for staining purposes, and obedience by the student to laboratory regulations requiring that loops contaminated with a culture of tubercle bacilli be placed in boiling water for several minutes before flaming. Failure to carry out the last point in handling pathogenic strains can easily provide an inoculum for a whole class.

#### COST

Where large groups are handled by a well organized student health department, financed by an annual health fee, the actual cost of a tuberculosis program can be as low as \$2 a year per student. Satisfactory results can be achieved by the use of paper x-ray plates with a check up of suspicious cases by celluloid films with the resultant saving of about 50 per cent of the cost of the latter. The fluoroscope can also be utilized to economic advantage, though probably its use is best restricted to persons of slight or moderate build. Whatever the cost, it must be met if there is going to be a reduction in tuberculosis morbidity among medical students.

#### CONCLUSIONS

It has been shown that medical students are particularly prone to acquire tuberculosis, that they are infected to a much greater degree than other student groups, and that infection and

the development of the disease occur chiefly in the clinical years of their training. The most obvious cause of this is their high degree of exposure to tuberculous patients where sanitary precautions are not observed. It has been demonstrated that a modern case-finding program will reveal tuberculosis in its most easily arrested stage and at a time when ultimate recovery is almost guaranteed. Consequently, the American Medical Students' Association recommends the institution of a case-finding program in all medical schools, and the institution of isolation and aseptic technic in handling open tuberculosis.

### WHAT SHOULD THE DOCTOR BE TAUGHT?

We must agree with Aristotle, said W. R. Halliday, LL.D.,<sup>1</sup> principal of King's College, London, that there are other qualities than those which can be tested by examinations which are necessary to the application of medical knowledge. It is common experience that, in some branches of the profession, one who has not been a brilliant student may prove to be a better practitioner than his fellow who has been more successful in academic tests. Can one think of two more different men in the higher walks of medicine than William and John Hunter? William, the fashionable accoucheur, an eloquent orator and a social success; John, incomparably the greater original genius, difficult, rather farouche, and tongue tied to such an extent that before giving his lectures he required to fortify himself with a draft of laudanum. We sometimes confuse the minimum standard of knowledge required for a license to practice and what is quite different, a hall-mark of scientific proficiency and promise. There is work for general practitioners as well as for specialists. These specialist enthusiasts, Dr. Halliday said, are terribly single minded. Long ago, Peter Latham wrote: "Many a great chemist, a great botanist or a great master of analysis may be found to contend that what he has to teach is indispensable to the medical student; that the principles of his science are at the root of all rational practice. But beware of great authorities. They have a tyrannous way with them." In former days, the specialties of the clinical period of study had not developed their modern complexity and multiplicity. It was not unusual then for a doctor to have taken his degree in the humanities before he came to the study of medicine, and this kind of education produced a very fine type, a type which was especially qualified to keep the medical profession in intimate touch with the world of laymen. But whether we deplore it or not, that kind of medi-

cal education has gone for good. The basis of modern medical education is now scientific. One must start with elementary zoology, botany, physics and chemistry on the theory that the doctor to be is to get an idea of the principles of these sciences. There is one school of thought which is working in the direction of teaching these subjects as specially adapted to the brains and requirements of medical students. That, Dr. Halliday said, is wrong. He would like these elements of science to be kept quite disinterested. It is important that the future physician get a glimmering of what these sciences are about irrespective of the art of healing. It is important if he is later to be a specialist that he should have sufficient general grounding to be able to resume and to carry further his studies in the relevant science.

Is the prospective general practitioner to be expected to master every possible method of treatment during his period of study? That is the problem which has to be faced, for as medical science advances the subjects will multiply still further. To try to teach too many subjects in a given time is to have them all imperfectly mastered. It is not a good plan to set up a standard which involves knowing less and less about more and more. I am sure, Dr. Halliday continued, that some at least will consider that there is a real danger of the medical curriculum for the ordinary student becoming overloaded. Surely to turn out good doctors and to advance medical knowledge in the long run does just as much to relieve human suffering as the maintenance of the wards in a hospital.

### STUDY OF SYPHILIS AMONG WISCONSIN STUDENTS

In view of the national syphilis campaign, the Department of Student Health at the University of Wisconsin endeavored to determine the incidence of syphilis among the college students. An elaborate setup was established to assure the student protection against his identity being revealed when the results were posted, then a post card was sent to every student inviting him to have a Wassermann test made on a certain day. While at first the response was high, it gradually fell off as the novelty decreased, and the total number of tests made finally amounted to only 30.5 per cent of the student population. There were 2,442 tests made on male and 944 on female students. A report of this study has been made by the director of the Department of Student Health, Dr. Llewellyn Cole.<sup>1</sup> A negligible amount of syphilis was discovered. There were only two cases of active syphilis in the group of 3,389 who submitted to the examination, two cases in which there was a persistent 1 plus reaction

1. Halliday, W. R.: What Should the Doctor Be Taught? *Lancet* 2: 866 (Oct. 9) 1937.

1. Cole, L. R.: Survey of Syphilis Among Students at University of Wisconsin, *Arch. Dermat. & Syph.* 38: 70 (July) 1938.

and one case in which there was a 2 plus reaction. Six doubtful reactions were reported and on repeated examinations they were still doubtful. The conclusion arrived at from this study coincides with the experience in the care of students at the University Infirmary where among about 2,000 admissions and about 50,000 outpatient visits during the year, one or two is the maximum number of cases of syphilis discovered. Nevertheless, Dr. Cole recommends that the Wassermann test be performed as a routine on each newly entering student and on each graduating student.

### INTERN TRAINING IN OBSTETRICS

The Maternal Welfare Commission of the Pennsylvania State Medical Society recently endeavored to secure the opinion of recent interns and of older practicing physicians on the present method of training interns in obstetrics in the approved one year hospitals in Pennsylvania. Dr. Walter J. Larkin,<sup>1</sup> a member of the commission, sent a questionnaire to 200 recent interns. It was not compulsory for the interns to reply to the questionnaire nor did they need to sign their names. Following is an abstract of Dr. Larkin's report on this survey: The first question was "Do you honestly think that your obstetrical training received as an intern qualified you to do obstetrics, unassisted, in the home or hospital?" Among 154 replies, twenty-two answered the question "yes" and 132 answered "no." The second question was "If not, was your service too brief or not properly supervised, or too small, or what?" More than 90 per cent of the replies to this question were to the effect that the service was too brief; 64 per cent replied that the service was too brief and not properly supervised, and 23 per cent responded that the service was too small. Some of the other questions with Dr. Larkin's comments were: Do you think you should have had more difficult obstetrics or more forceps deliveries? Ninety-seven per cent (128) of the answers were "Yes." Many qualified their statements by saying that they would have been satisfied if the cases had been properly discussed and properly supervised, even though they had not been allowed to apply the forceps. One replied that "he had never had a forceps delivery but had witnessed one forceps delivery. Most of them replied to the effect that they did not have enough forceps deliveries for a young man entering a small town practice. How many forceps deliveries did you have? Thirty-four physicians entering practice in the commonwealth of Pennsylvania, in small cities, stated that they had never had a forceps delivery and had never put on forceps. At how many

cesarean sections did you assist? The answers to this question varied from none to twelve. Six did not assist at any.

Dr. Larkin also sent 100 questionnaires to practitioners who had completed their internship within the last ten years and thirty-five questionnaires to physicians who had been in practice more than ten years. Some of the questions and the analysis of the replies were as follows: 1. How much laboratory work do you perform in your office, such as urinalyses, blood counts, blood sugar estimations, Wassermanns, smears, etc.? 2. How much of your laboratory work do you send to the laboratory? 3. If you do laboratory work in your office, of what does it consist? 4. How many necropsies have you performed since completing your internship? 5. At how many have you assisted? Three had performed one or more necropsies; all had been coroners or coroners' assistants. No one in general practice did anything outside of urinalyses and blood counts. Every one stated that he was doing his own urinalyses. Seven physicians responded that they were doing their own blood counts.

The results of this questionnaire prove, Dr. Larkin says, "that there is something wrong with the obstetrical training of the intern and something definitely wrong with the time lost in laboratory training for the intern. The laboratory service which is never used in full when a young man leaves his internship is overemphasized, and too much time is lost in that department. . . . A six weeks period is not sufficient time in which to train a man to do obstetrics." "Yet the commonwealth of Pennsylvania insists that the intern spend two solid months of eight hour days in the laboratory and but six weeks, with no restriction on the number of hours, in obstetrical training."

### Claude Bernard's Graduating Thesis

In 1843 Bernard set himself to discover what happens to different foodstuffs in the course of nutrition. He was led to the conviction that phenomena of nutrition can be settled only from the point of view of the chemist. He started with digestion in the stomach, particularly the role of gastric juice. His original contribution was that gastric juice acts upon cane sugar, for he found that if sugar was injected into the blood after it had been acted upon by gastric juice it could no longer be recovered in the urine, whereas if cane sugar alone was injected into the blood it was excreted unchanged. He used these results for the thesis for his degree of doctor of medicine, which he presented in December of this year, throwing in for good measure a few pages on such unrelated topics as hydrocephalus, aneurysms and cupping glasses. He was successful in his defense of this thesis, and in publishing it he dedicated it to Magendie. The completion of his medical course did not fundamentally change his mode of life, except to transfer his activities completely from the hospitals to the laboratory. He never at any time engaged in the practice of medicine.—Olmsted, J. M. D.: Claude Bernard, Physiologist, New York, Harper & Bros., 1938.

1. Larkin, Walter J.: A Survey on Intern Training in Obstetrics and Laboratory Work, Pennsylvania M. J. 41:714 (May) 1938.



## Medical College News

*Medical schools, hospitals and individuals will confer a favor by sending to these headquarters original contributions, reviews and news items to be considered for publication in the Student Section.*

### Minnesota Fellows to Study Cancer

The National Advisory Cancer Council of the U. S. Public Health Service has awarded fellowships to Drs. Raymond E. Buirge, Charles B. Craft and Carl J. Lind Jr., all of whom for the last three years have had teaching fellowships and have been taking special training in the department of surgery at the University of Minnesota Medical School, Minneapolis. Under the terms of their new fellowships they will devote from two to three years to the study of cancer.

### Annual Expedition to Greenland

Eleven college students were included in the party accompanying Capt. Robert A. Bartlett on his twelfth annual expedition to Greenland, which sailed from New York June 20. The party will make reports on temperatures and water conditions to the Hydrographic Bureau in Washington and will collect specimens for the Cleveland Museum of Natural History and for the Smithsonian Institution.

### Lost on the Clipper

Dr. Earl Baldwin McKinley, dean and professor of bacteriology and director of medical research at the George Washington University School of Medicine, Washington, D. C., and Fred Campbell Meier, plant pathologist of the Department of Agriculture, were on the Hawaii Clipper, lost over the Pacific, July 28. They were engaged in research on aerobiology and in making arrangements for the continuation of the collection of micro-organisms, viruses, pollens and dust in the upper air by officers of the trans-Pacific airships.

### Associate Wins Trip to Switzerland

Clay Myers Greer, M.S., research associate in pharmacology, Vanderbilt University School of Medicine, Nashville, Tenn., was awarded a prize by the committee on international congresses of the Federation of American Societies for Experimental Biology. The prize will be a trip to the International Physiological Congress in Zurich, Switzerland, in August. Mr. Greer's work was on "Nor-Epinephrine [ $\beta$  (3,4-Dihydroxyphenyl)- $\beta$ -Hydroxyethylamine] as a Possible Mediator in the Sympathetic Division of the Autonomic Nervous System."

### Dr. Code Receives Theobald Smith Medal

Charles F. Code, Rochester, Minn., will receive the second Theobald Smith Award in medical science, it was announced at the meeting of the American Association for the Advancement of Science, June 30. The presentation will take place at the winter meeting of the association. Dr. Code was selected "in recognition of his discovery that histamine is normally present in human blood and when present in abnormal amounts indicates tuberculous infection or an allergic reaction to the presence of foreign proteins in the body." Dr. Code graduated from the Manitoba Medical College in 1934. He entered the Mayo Foundation as a fellow in physiology, July 1, 1934. The Theobald Smith Award, consisting of a bronze medal and \$1,000, was established in 1935 by Eli Lilly & Co., Indianapolis, to be awarded to an investigator under 35 years of age for "demonstrated research in the field of the medical sciences taking into consideration independence of thought and originality."

### Intern Wins the Burr Prize at Philadelphia

Dr. Samuel Koppelman received the Charles W. Burr prize for interns at the Philadelphia General Hospital June 30 for a thesis entitled "Effects of Large Doses of Insulin on Blood Hydration in Man." The prize is \$100.

### Graduates Accept Reserve Corps Commissions

Forty-five commissions as first lieutenants in the medical and dental reserve corps of the U. S. Army were presented to graduates of the schools of medicine and dentistry of Baylor University at commencement exercises, June 6. Dr. Hardy A. Kemp, professor of bacteriology at the medical school, who holds a major's commission in the medical reserve, was in charge of the exercises and the principal speaker.

### Scholarship in Psychiatry

A Woolley scholarship in Paris is offered an American student in psychiatry for the year beginning October 1. The scholarship consists of \$600 and a room in the United States House of the Cité Universitaire in Paris, under whose auspices the offer is made. According to *Nature*, the candidate must be an American citizen. Application should be made to the Institute of International Education, 2 West Forty-Fifth Street, New York.

### Mercy Hospital Becomes University Hospital of Loyola

Mercy Hospital, 2536 Calumet Avenue, Chicago, has recently become University Hospital of Loyola School of Medicine, which is on the north side, and will henceforth be known as Mercy Hospital, Loyola University Clinics. Dr. Robert S. Berghoff, Chicago, has been appointed medical director of the institution. Dr. Berghoff is clinical professor of medicine at Loyola. He graduated from St. Louis University School of Medicine, St. Louis, in 1913.

### Reunion of Former Interns at Rhode Island Hospital

The second reunion of former interns will be held at the Rhode Island Hospital September 9-10. Dr. Herman C. Pitts is general chairman; Dr. Henry S. Joyce, general secretary and treasurer. The mornings will be devoted to clinics and clinical demonstrations at the Peters House. There will be a five year study of gallbladder cases, demonstration of a vascular boot originated in the hospital, motion pictures illustrating a new method of cystotomy, a demonstration from the gynecologic research department, improvements in orthopedics and fracture treatment, and a demonstration of neurologic methods by former interns who are now members of the staff of Butler Hospital. There will also be a fracture clinic, thoracic clinic, tumor clinic, demonstration of cardiology and a clinical pathologic conference.

On Friday afternoon the papers given by visiting former interns will be read. Dr. Reeve H. Belts of Boston will speak on "Some Aspects of Nontuberculous Thoracic Therapy" and will show motion pictures of various thoracic operations. Dr. Nat H. Copenhaver, Bristol, Tenn., will read a paper on the history of the thyroid. Dr. Arthur H. Morse, professor of obstetrics and gynecology, Yale University School of Medicine,

New Haven, Conn., will read a paper on "Pathology and Treatment of Antepartum Hemorrhage." Dr. John P. Macnie, New York, will present an ophthalmologic subject. Dr. Harold G. Tobey, Boston, will speak on "Allergy" and Dr. James E. Paullin, Atlanta, Ga., on "Cardiovascular Syphilis." This meeting will be held at the Aldrich House Auditorium.

Saturday afternoon a Rhode Island clambake will be served at the Squantum Club.

#### The Status of Interns in California

The Board of Medical Examiners of the State of California sent a letter to all hospitals in the state relating to the status of interns in hospitals. The board pointed out that the Business and Professions Code provides that no person may practice any system of treating the sick unless he has a valid unrevoked certificate to do so. An exception is made in the code of students regularly matriculated in any legally chartered school approved by the board, provided the treatment is without compensation to the student and is a part of his course of study. This means that interns must be regularly matriculated students in legally chartered schools approved by the board of medical examiners or they cannot treat the sick, and that as interns they are prohibited from treating the sick except as a part of the regular course of study. It appears, the board wrote, that any person not regularly matriculated in a school approved by the board who might treat the sick in a hospital might in so doing bind the hospital for his acts in such a way as to make them guilty of violating the section of the code which states that "corporations and other artificial entities have no professional rights, privileges or powers."

#### New York Personals

Carlyle F. Jacobsen, Ph.D., assistant professor of psychology at Cornell University Medical College, has been appointed professor of medical psychology at Washington University School of Medicine, St. Louis. Dr. William M. Cahill, instructor in biochemistry at the Cornell University Medical College, has been appointed instructor in the department of physiologic chemistry of Wayne University College of Medicine, Detroit.

#### Alumni Meetings in Texas

Dr. George W. McCoy, formerly the director of the National Institute of Health, Washington, D. C., was the principal speaker at the recent commencement of the University of Texas School of Medicine in Galveston; his subject was "The Goal of the Future—Better Medical Service."—Dr. Charles Gordon Heyd, New York, formerly President of the American Medical Association, delivered the recent commencement address of Baylor University College of Medicine, Dallas, on "Medicine in a Changing World." Dr. Heyd also addressed a luncheon meeting sponsored by the alumni and faculty of the university; this address was entitled "The Opportunities of a Great Medical Center as Offered by Dallas and the Southwest."

#### Alpha Omega Alpha Awards

At the annual commencement of New York University College of Medicine June 8 the Alpha Omega Alpha Prizes were awarded to Drs. Robert Franklin Pitts, Milton Sapirstein and Rudolph E. Drosd for the highest scholarship in the fourth year class. Dr. Robert Pelton Wadham received the 1938 alumni award for meritorious service to the university. There were 134 graduates.

#### Appointments and Promotions at Temple

Recent appointments to the faculty of Temple University School of Medicine, Philadelphia, include the following:

Dr. Michael Scott, associate in neurosurgery.  
Dr. Richard P. Thompson, clinical assistant in surgery.  
Dr. Jefferson Neale Richardson, clinical assistant in dermatology and syphilology.  
Dr. Mason Royden C. Astley, clinical assistant in surgery.  
Dr. Thomas A. Campbell, resident in radiology.  
Dr. Augustin R. Peale, III, special resident in radiology and pathology.

The following promotions were also announced:

Dr. Lowrain E. McCrea to assistant professor of urology.  
Dr. Alexander Silverstein to lecturer on neurology.  
Dr. Leon Hugh Warren to instructor in dermatology and syphilology.  
Dr. Robert K. Arbuckle to instructor in radiology.

The address at commencement exercises, June 16, was given by Secretary of the Treasury Henry Morgenthau. There were 113 graduates.

#### Guide Service at Harvard

Guide service is now available at Harvard University Medical School, Boston, and will continue through September 17. During the summer of 1937, when the service was first introduced, about 11,000 visitors were taken through the various divisions of Harvard University.

#### Medical Care for Students at Maryland

Provision has been made for the systematic care of students in the medical school, including a physical examination of all students during the first week of the semester. A student must pass this examination before he is finally accepted as a student. Students in need of medical attention will be seen by the school physician in his office or in cases of necessity in their homes. If it becomes necessary for a student to enter the hospital during the school year, the medical council has arranged for payment of part of all his hospital expenses, depending on the length of stay and special expenses incurred. This regulation applies only to students admitted to the hospital through the school physician's office. Prospective students are advised to have any known physical defects corrected before entering in order to prevent loss of time. It is especially urged that all new students have their eyes examined and any error of refraction corrected before beginning the course.

#### Koessler Fellowship Awarded

The Jessie Horton Koessler Fellowship for the aid of research in biochemistry, physiology, bacteriology or pathology has been awarded for 1938-1939 to Ralph E. Kirsch, M.A., who has completed three years of the medical course at the University of Chicago. Mr. Kirsch's study of the control of length of gestation in mammals, with especial reference to the physiology of the placenta and uterus, will be carried on under the direction of Dr. Allen T. Kenyon, assistant professor of medicine, School of Medicine, Division of Biological Sciences, University of Chicago. The fellowship was established in 1930 under a bequest of \$10,000 from Dr. Karl K. Koessler; the income from the gift defrays the expense of the annual award. It is administered through the Institute of Medicine of Chicago.

#### Maryland Personal

Dr. Lewis H. Weed, professor of anatomy and director of the department, Johns Hopkins University School of Medicine, received the honorary degree of doctor of laws from Duke University at the recent commencement.

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## OPPORTUNITIES IN PEDIATRIC PRACTICE

CHAIRMAN'S ADDRESS

CLIFFORD SWEET, M.D.  
OAKLAND, CALIF.

Pediatrics has much to offer that it did not have twenty-five years ago; but as in all the other specialties in medicine, the number of well qualified practitioners has increased manyfold while all recent graduates, whether in some other specialty or in general practice, have had a far better fundamental pediatric training during their undergraduate days than was available anywhere during the earlier years. Thus, while many more children than formerly are getting adequate pediatric care, there is a much greater number of qualified physicians among whom the patients are divided. If one looks uncritically at the practice carried on by an individual physician, therefore, one may think that pediatric practice is going into an early and perhaps fatal decline and one's mind may turn longingly back toward the "good old days" of the pediatric boom. However, I know of no old days which can be called altogether good when one examines them critically enough to compare all their disadvantages as well as their advantages with those of any given later time, unless a dark age has descended in the meanwhile.

During the earlier years it was easy to become a specialist. A good training in medicine, an interest in a certain field of study, a short time spent familiarizing oneself with whatever knowledge others had accumulated, and the ability to teach oneself from observation soon raised one well above the level of one's confrères. The number of physicians with special training was small, and the number of patients needing special care, much of which could now be given by any competent general practitioner, was great, so all the conditions for "the beaten path to the door" were abundantly present. Also, since in that not far distant day the counsel of the family physician, and even more that of the specialist, was sought only under the pressure of dire need, adequate fees could be charged for emergency care and, once they were paid, years might elapse before there was again any drain on the family purse and no concerted cry against the high cost of medical care was heard in the land.

During my undergraduate years (1905-1912) and for several years afterward there were pediatric teach-

ing centers in this country only at Boston, Chicago and New York (listed alphabetically) and the pioneer work of such teachers as Sedgwick at Minneapolis and Porter at San Francisco, while Howland was just beginning his work at Johns Hopkins. In the other large cities of this country pediatric practice and teaching were carried on by one or two men, and most of them had studied in Berlin or Vienna. This was the *eiweissmilch* period of American pediatrics.

With few exceptions pediatrics was taught as a minor subject in the departments of obstetrics and medicine. As an undergraduate I attended lectures by the professor of diseases of children, a general practitioner who confined his remarks almost entirely to diseases, usually without clinical demonstration, and a children's clinic held once weekly at which the attendance of as many as five children was remarkable. How greatly this contrasts with the well organized pediatric department, often one of the best teaching divisions, in all the leading medical schools of the present.

While the larger cities were not so nearly saturated with pediatricians and pediatric ideas were not so generally accepted as they now are, most cities of a size that now support several (from three to six) pediatricians were but little affected by pediatric knowledge. Such communities were ideal for the practice of simple or primary pediatrics. The milk supply was dirty, pasteurization was neglected or ineffective, marantic infants were plentiful and many thrive on mixtures of boiled skimmed milk, water and sugar, fed at regular intervals, and when death took his toll his visit was not altogether unexpected and "God's will" was accepted. Scorbutus was common, and its prompt cure with orange juice aroused more than passing comment. Rachitis was frequently seen in advanced stages, so that the physician had the courage to prescribe and the patient the hardihood to stomach the cod liver oil then available. The diagnosis of pyuria or of otitis media before rupture of the tympanum and empyema, not to mention lumbar puncture, branded one as a specialist indeed. Infants were fed largely on patent foods procured on the advice of neighbors, relatives and physicians. Fortunately the very limitations of such artificial feeding made insistence on breast feeding easier than it is now.

While sick infants were abundant, one had little or no opportunity to give the preventive care and the guidance which it is now known can play such an important part in the care of well infants and children. I had little or no opportunity for systematic care of well infants during my earlier years of practice except as I extended it as a labor of love and a means of study to those infants whose mothers were under

my obstetric care, in the form of the gratuitous and not always welcome advice which I gave while attending a sick infant or another member of the family or on occasions when the baby was brought to my office to be duly admired and his net weight determined because some question had arisen that could not be answered by weighing him while fully dressed at an obliging neighborhood druggist's or grocer's.

Regularity as a basis for child management was a revolutionary idea, often received by the layman with evident amazement that any one could be so foolish as to suppose that any infant could be taught regular habits, and it was regarded by many physicians as an unnecessarily fussy modern notion. So with few exceptions infants slept with their parents and were nursed, fed, fondled, jigged and carried about as fancy dictated. I have often wondered if the rise of golf as a form of exercise may not have had some relationship to the decline of floor walking with an infant in arms during the night.

In the medical centers at that time pediatric practice, while not so limited, was still hedged about by various complicated forms of infant feeding, and the pediatrician was distinguished from his fellow practitioners largely because he alone possessed the basic training in the care of infants and children which has been taught in more recent years to all graduates in medicine.

From many quarters have come grave doubts concerning the future of pediatrics as a specialty in medicine. While those doubts are a natural outgrowth of the changes which have taken place in the fundamental structure called society, of the even more rapid progress which has been made in medicine, including pediatrics, and of human nature when faced by changing conditions, I think it profitable to consider briefly the advantages and the hopeful signs for the future with which such doubts and fears may be offset. Doubt, fear and distrust of an uncertain future are an inescapable part of the thought of all intelligent creatures. The only defense against becoming hopeless and overwhelmed by fear, doubt and distrust of the future is to stop and give time and thought to the courage, the will to live and be happy, the intelligence and the faith which have carried mankind so far above his original bestial state and which are a priceless part of the heritage of each. A philosophy of reasonable hopefulness must dominate the lives of those who are devoted to planning the very foundations on which children are to erect their lives.

#### REQUIREMENTS FOR A SPECIALTY

Any division of medical practice which is truly a specialty must fulfil two fundamental qualifications. First, it must have a continuing record of accomplishment which could not be an outgrowth of the general practice of medicine, and, second, it must challenge an appreciable number of the best minds in the medical profession to become proficient in its practice and to make ever greater its service to mankind by the addition of new knowledge and practical applications of that knowledge to the needs of men.

Pediatrics fulfils these fundamental definitions of a specialty. Its record of accomplishment is reflected not only by its large part in the diminished infant and child mortality but in better care for and understanding of children among civilized people everywhere, and above all in the greatly increased ability of all practitioners of medicine in all specialties and in general

practice to care for children. In fact, the devoted and unselfish teachers of pediatrics have done their work so well that the very excellence of their teaching has done more than any other one thing to raise doubts concerning the future need for pediatrics as a specialty. And teachers of pediatrics are not alone those who teach and train students, interns, residents and nurses in medical schools and hospitals but every one who practices good pediatrics in the community in which he lives. Any community which has within it a worthy pediatrician becomes a place in which the level of child life rises, because his teaching influences physicians, nurses, dentists, teachers, parents and, not least, the children—for who is so easily quickened to evangelical zeal by new thought as is the child?

That the present level of medical care for children would have risen naturally as a corollary to the general advance of medicine without the labors, research and devotion of the many men and women who have made it their life work is highly improbable. At least it rose sharply in both scope and excellence coincidentally with the birth of pediatrics as a specialty, has continued steadily upward and certainly has not yet arrived at, or anywhere near, the state of perfection beyond which even greater progress is impossible. The problem of fitting specialized medical knowledge and progress to the peculiar needs of the child will always require for its solution persons who give to it their undivided energy and devotion. In the congress devoted to human welfare, whose members are medical specialists, the child must always be ably represented. The future of pediatrics, I am certain, is made secure by the very fact that children have needs which are different from those of adults. The ability best to serve those needs can be attained only through long study and experience by physicians whose principal interest is in children and in whom there resides a peculiar ability, not possessed by every one, which enables them to understand and enter the intimate life of the child, not as an intruder but as a friend.

Another stone which makes secure the foundation is the concern of the pediatrician for the entire life of the child rather than with some part or system which is suspect or out of order temporarily. As in all other human relationships, this advantage carries with it great responsibility and some disadvantages. In a relationship between patient and physician which can be fruitful and grow in influence only if it continues over years there must be real interest, patience and a quality of leadership on the part of the physician that hardly rests on one who successfully performs a temporary, although great, service such as an operation or even obstetric care. Having given much of himself the pediatrician must accept the misunderstanding and ingratitude which are at times his portion with that nobility of the spirit which causes him to search himself for faults rather than accept the ready to hand satisfaction which comes to one who easily places all blame on another.

#### PREPARATION FOR PRACTICE OF PEDIATRICS

The practice and the problems of pediatrics demand as thorough preparation and offer as many opportunities for study and research as does any specialty in medicine, if not more. The mastery of present pediatric knowledge requires an amount of time, energy and intellectual acuity that compares favorably with the demands of any other specialty. In addition it challenges its followers in certain peculiar ways. Disease

must be detected and studied in its beginnings, when signs and symptoms yield their evidence only to painstaking study, keen observation and sound judgment developed by experience. Here medicine most often yields her choicest gift, prevention. The pediatrician must know as much about all the other branches of medical practice as the internist does; he must know more than those specialists who treat only some parts of the body, and in addition he must become expert in the special knowledge which should govern the application of treatment to children in respect to health, nervous stability and, especially, growth and development.

Growth and development, with all their variations in the individual, have yielded many secrets to intensive study but have many mysteries not yet solved and can never be reduced to the simplicity of an exact mathematical formula. In this field, peculiar to pediatrics though not its exclusive domain, wise, intelligent and constant study will yield marvelous results, although the student will finally have to agree with Robert Louis Stevenson: "Little do ye know your own blessedness; for to travel hopefully is a better thing than to arrive, and the true success is to labor."

Perhaps not the least of the intangibles which the pediatrician must solve arise from the fact that he must gain a large part of his information indirectly through the observations and reports of parents. A piece of information filtered through the emotions and the often prejudiced, not infrequently poorly articulate, mind of a layman requires experience and long and thoughtful study of the human mind and emotions.

In addition to all other technical training the pediatrician must learn a sound, efficient technic of teaching, the necessity for which is important in the practice of any branch of clinical medicine but most so in pediatrics. He must be able to convince, teach and often inspire the adult members of the family if he hopes to influence effectively the life of his patient, the child.

All in medicine who are worthy of their calling must have an interest in their patients which goes beyond the mere use of technical skill and the material rewards therefor, but the pediatrician must have genuine emotional, I might say spiritual, attachment to children—a concern for their welfare which will always cause him to accept generously as a considerable part of his rewards the consciousness that he has contributed to life at its beginning. True, the practice of pediatrics must yield him a living and the means with which to carry on his work, but if this is his primary interest he might better choose a specialty in which the financial returns per patient are usually greater.

Finally, pediatrics is the only specialty, with the possible exception of geriatrics, which is limited only by the age of the patient cared for. In this distinction lies, I believe, one of its greatest sources of permanence and strength, allowing its followers much latitude of choice in developing their own peculiar abilities and interests and perhaps making it the pioneer on the trail which all specialties will follow during the coming years. By this I mean that the specialist will more nearly approach the relationship to his patients formerly occupied by the general family physician, in that he will have an ever increasing interest in and concern for his patients in all their problems of living, in health and disease. He will then serve them more freely than most now do in the solution of minor problems, and

as now within the limits of his specialized technical training, while he guides and counsels them when they have need for the care and skill of experts in other fields.

#### ADVANCEMENT OF PEDIATRICS

The principal ways in which pediatrics can be advanced above its present high level are the following: First, of course, the pediatrician must maintain all efforts unabated to protect, understand and enrich the entire life of the child in all its phases, physical, mental, emotional and moral. What greater challenge can there be for any one than that he be a contributor to a generation that has been brought up to face life physically efficient, freed as far as may be of unreasonable fears, with fully developed mental powers and trained in those fundamental qualities of character without which no civilization can long endure? Second, the pediatrician must have a training sufficiently broad and comprehensive to enable him to give children more complete care at reasonable cost. This can best be done on an annual fee basis, and I hope soon to present a detailed paper on this method of carrying on pediatric practice, a method which Gengenbach of Denver found to be quite generally followed in the West but used little, if at all, in other parts of this country. One must remember with Zahorsky<sup>1</sup> that people who have young children are usually at the small income period of their lives. Third, good pediatric care must be extended to rural communities, in many of which there is only a beginning. Fourth, the specialty must give its followers such training that those whose interests and qualifications make them valuable primarily as pediatricians may be able to develop especial ability in the application of other specialized fields of medical knowledge and technic to the needs of children. This means of advance should include the sound pediatric training of the numerous followers of other specialties, many of whose patients are children.

All of these demand certain changes in the procedure of many medical schools and of the societies whose members are specialists. Pediatrics and all the other major specialties in medicine have progressed along similar lines. In all a concerted effort has been made to increase the amount and quality of the teaching given to undergraduates, and three or more years of special training is being offered to interns, assistant residents and residents. Therefore, while all recent medical graduates have a much better fundamental understanding of all the specialties than the graduates of former years, and while the younger general practitioners and those in specialties of a general character, such as internal medicine, are qualified to care for many pediatric problems which were formerly neglected or required the care of a pediatrician, there is the disadvantage that modern medical education, with its great emphasis on specialized training, may cause too early and too narrow specialization.

The increasing turn of physicians toward the specialties is due not only to the increased satisfaction which comes from doing better work within a limited field, the greater honor, the emoluments and the chance to live in the city of one's choice, with perhaps a university appointment, but also to the fact that the graduate of recent years can get desirable hospital appointments, with few exceptions, only in the specialties and is not fitted either psychologically or actually to do general practice. All too often as an undergraduate he specializes as much as possible in order to be more certain

1. Zahorsky, John, St. Louis: Personal communication to the author.



of an appointment in the department of his choice. Should he choose and be appointed to a rotating internship he must spend at least half his time in the department where he hopes to be appointed assistant resident and resident. After finishing this long course of postgraduate training he finds it difficult to get a suitable short term appointment in another department. Or if he goes into general practice for a time he usually cannot return to an appointment in another department, because such posts are filled by men who have remained after graduation to go through the regular succession and too often the head of the department fears that the man who has practiced is too advanced to make sufficiently pliable house officer material.

#### EDUCATION OF THE PEDIATRICIAN

I think that changes should be made in medical education to broaden the training of the specialist and make it easier for the man who is in general practice to get the best training in the specialty of his choice; and by the best training I mean a hospital appointment rather than a postgraduate course. Every reasonable effort should be made to discourage the undergraduate from becoming prematurely a specialist. This can be done by helping him to realize that the best basis for any specialty is the greatest possible attainment in all fields of medical knowledge. Even more can be accomplished by the assurance that his hospital appointment will depend on the excellence of his work, his showing of sound judgment and above all his manifestation of such attributes of character and personality as will make him one of those best fitted to carry on the highest ideals of medicine, rather than on his exclusive attention to and cultivation of a single department and its teaching staff.

During the hospital years capable house officers should be encouraged to spend at least one year working in one or two departments other than the one in which the following two years will be spent. I can think of no better training for pediatrics than a year spent in the surgical, the orthopedic or, perhaps best of all, the ear, nose and throat service. I am certain that at least six months or, better, an entire year in pediatrics would be of great value to the future patients of any specialist who may care for a considerable number of children. Such an exchange of interns should be made a part of a deliberate plan even though it would entail some administrative difficulties and would demand closer attention to the service by the teaching staff for a time after the exchange. It would also make necessary the amendment of the by-laws of some academies and colleges to remove the condition that time must be spent in preparation for the practice of a specialty and to substitute evidence of fitness and accomplishment as the major requirement for admission and certification. This change would be following the recommendation of many leaders in education, who are advocating comprehensive tests of accomplishment without regard to time spent in preparation as the basis for degrees and other honors. Such a program would be of especial and peculiar benefit to the young pediatrician, and automatically it would enable young practitioners to live and work in urban communities, where a too rigid limitation of practice would prevent them from making a decent income.

Opportunity for physicians who have spent a few years in general practice to return to hospital positions rather than to the lesser benefits of formal postgraduate courses is, I believe, greatly to be desired, and a

valuable by-product would be the encouragement given to younger graduates to go into general practice for a time and then return for further training.

#### THE CHALLENGE OF PEDIATRICS

The work of pediatrics has not been completed. It offers an ever increasing challenge, asking its followers to pray not only for more worlds to conquer but for wisdom and energy sufficient to meet the heavy demands placed on them. While the solutions of the older, simpler problems of feeding and regulation of the life of the infant have become fairly common knowledge and are reasonably well practiced, there remain many more numerous and complex problems.

Family life no longer rests on the simple predicates of a father who was the lord and master of the household; a mother who was the family drudge, in whom it was unseemly to complain openly of her lot, even though loss of temper, with satisfaction (the "release" of modern psychiatry) obtained from dealing out swift and summary punishment, caused no criticism or upbraidings of conscience, and children who were "seen but not heard" but were under the constant and beneficent discipline imposed on them by their share in the necessary tasks of everyday family life. The empty water bucket and wood box were powerful disciplinary forces, for which it is difficult to find counterparts in modern life. Pediatricians can do much for parents and children as teachers and interpreters of modern knowledge, not only to make smooth the ways of family life but to make it, as it must always be, the greatest means of fitting the child for the abundant life. He can help the father back into his rightful place in the family circle, from which modern economic life has almost removed him, and he can lead the distracted mother out of the mire of partially understood child psychology, in which she wanders in constant fright of Giant Malnutrition and of Giant Despair, lest some slight fault of hers may hurl her child into the eternal abyss where conditioned reflexes and repressions have their abode.

The new field of the adolescent period (from 12 to 18 or even 20 years) is best approached by the pediatric route. Sound training of parents and children throughout the preadolescent years will reduce the difficulties of this period to a minimum, and the pediatrician who gives of himself to the care of children from babyhood onward literally grows into an understanding of these problems and a sympathy for the "big children" which can be gained in no other way.

A sound working knowledge of endocrinology must have a considerable place in pediatric practice. With due respect to the limitations of the present state of knowledge and its practical applications to growth and development, I feel that this field of therapy may well usher in a new era of human welfare.

Pediatric training is an excellent foundation for the study of any branch of medical knowledge which may be the lifelong interest of the student. For example, surgery has its special applications during childhood, while the study of body mechanics during normal growth and development in individual patients will add much to the clarification and practical application of this very important branch of child welfare. Allergic hypersensitiveness is sufficiently different in its manifestations during childhood and during adult life to justify the giving by some of its students of especial attention to the problems peculiar to the earlier years of life. Or one's interest and abilities may lead one

to study the central nervous system intensively. Such a study will not only be absorbingly interesting but will be most valuable if practice is carried on in communities which are not well supplied with neurologic skill and knowledge. A knowledge of the ear, nose and throat will enable the pediatrician to treat infections of the respiratory tract at least as well as and I think better than any other practitioner. The contagious diseases, with their complications, will yield results in both curative and preventive medicine to any one who plows deeply in this field instead of merely harrowing, as is still too often done. The pediatrician is especially fitted to deal with the public health aspects of medical care for children. This activity will be of especial importance in rural communities, where, as I have said before, good pediatric care is badly needed; but there is a great need for pediatric guidance in the larger centers also.

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## THE TREATMENT OF ADDISON'S DISEASE

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Time will not allow detailed discussion of the historical background, etiology or pathology of Addison's disease. This can be found in the monograph by Rowntree and Snell.<sup>1</sup> This paper will therefore be limited to a consideration of the essential points of treatment.

Briefly the principles behind the management of patients with Addison's disease are as follows: In the first place, these patients are suffering from a destruction of the adrenal cortex. Earlier reports, such as that by Barker,<sup>2</sup> showed a high incidence of tuberculous destruction. Recent reports reveal an increasing incidence of simple atrophy of the cortex, but it will require more time to determine whether this change in incidence is more apparent than real. Guttman<sup>3</sup> found that the duration of the disease was longer when primary atrophy of the cortex was present ( $34.02 \pm 4.40$  months) than when the cortex was destroyed by tuberculosis ( $13.15 \pm 2.54$  months). If there is tuberculous destruction of the adrenal cortex, then, in a high percentage of cases, tuberculosis is present in other parts of the body. It sometimes happens that the attending physician can effectively correct the deficiencies caused by Addison's disease and yet the patient dies of renal, osseous, pulmonary or peritoneal tuberculosis. If the patient with Addison's disease does have tuberculosis, he must receive special care for this condition. If the patient has active pulmonary tuberculosis, the prognosis is very bad.

In the second place, regardless of the cause of the destruction of the cortex, there follows a lack of adrenal cortical hormone or hormones. Detailed biochemical and physiologic studies of these substances may be

found in the published reports of Hartman,<sup>4</sup> Kendall,<sup>5</sup> Grollman,<sup>6</sup> Zwemer<sup>7</sup> and Swingle.<sup>8</sup> Here only the fact need be mentioned that the cortical hormone or hormones are essential to life and that they have at least one important function, the control of the blood electrolytes. I will not discuss other functions except to say that there is evidence to suggest that the adrenal cortex plays a prominent role in carbohydrate metabolism.

Thirdly, since patients with Addison's disease lack this cortical hormone, they show changes in the blood electrolytes, namely a loss of chloride and sodium from the body with a retention of potassium, an increase in urea, a marked loss of fluids (with resultant hemoconcentration) and sometimes a marked hypoglycemia. These changes are incompletely understood.

Efforts to correct the disturbances of Addison's disease have proceeded along three lines: The first type of treatment consists in the addition of sodium, in the form of sodium chloride, and either sodium citrate or sodium bicarbonate. Loeb<sup>9</sup> deserves great credit for his emphasis on the importance of administering large amounts of salt. The second type of treatment consists in the restriction of potassium in the diet; this is described in detail in an article by Wilder, Kendall, Snell and their associates.<sup>10</sup> A third type consists of treatment with an active extract of the adrenal cortex.

Treatment by these three methods or by a combination of them has aroused much controversy. Some believe that all patients with Addison's disease can be treated successfully by the use of sodium salts alone, and that the use of a low potassium diet and cortical hormone is not necessary. Others believe that if patients receive enough hormone they need pay little attention to their diet and do not need to take large amounts of sodium salts.

Thompson<sup>11</sup> has made some interesting observations. He says:

We have followed three patients with marked Addison's disease, on a normal diet and with no other form of therapy except 10 to 20 cc. daily of Wilson's adrenal cortex extract, for a period of several months to over two years. This, of course, was after they had been brought out of crisis by other additional treatment. With the extract alone, it has been possible to get them to gain large amounts of weight and in general to carry on their normal activity, provided no active tuberculous infection is present. Although some reduction in pigmentation has occurred, it has not disappeared completely, leading us to believe that the extract, at least in the doses we have administered, does not represent complete replacement therapy.

The present paper is not given in the hope of settling this controversy but rather for the purpose of reviewing what may be considered to be adequate methods of therapy. I shall discuss the treatment of Addison's disease by means of the presentation of hypothetical case

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This paper does not represent the opinions of any single individual. It represents the composite experience of the members of the Sections on Biochemistry and Clinical Medicine of the Mayo Clinic.

1. Rowntree, M. D., and Snell, A. M.: A Clinical Study of Addison's Disease. Philadelphia, W. B. Saunders Company, 1931.

2. Barker, N. W.: The Pathologic Anatomy in Twenty-Eight Cases of Addison's Disease. Arch. Path. 8: 432-450 (Sept.) 1929.

3. Guttman, P. H.: Addison's Disease: A Statistical Analysis of 566 Cases and a Study of Pathology. Arch. Path. 10: 742-755 (Nov.), 895-935 (Dec.) 1930.

4. Hartman, F. A.: The Hormones of the Adrenal Cortex, in Cold Spring Harbor Symposia on Quantitative Biology, Cold Spring Harbor, Long Island, New York, Long Island Biological Association 5: 289-298, 1937.

5. Kendall, E. C.: A Chemical and Physiological Investigation of the Suprarenal Cortex, in Cold Spring Harbor Symposia on Quantitative Biology 5: 299-312, 1937.

6. Grollman, Arthur: Physiological and Chemical Studies on the Adrenal Cortical Hormone, in Cold Spring Harbor Symposia on Quantitative Biology 5: 313-322, 1937.

7. Zwemer, R. L.: Electrolyte and Sugar Determinations as Indicators of Adrenal Influence on Normal Cell Activity, in Cold Spring Harbor Symposia on Quantitative Biology 5: 323-326, 1937.

8. Swingle, W. W.: Experimental Studies on the Function of the Adrenal Cortex, in Cold Spring Harbor Symposia on Quantitative Biology 5: 327-342, 1937.

9. Loeb, R. F.: Glandular Physiology and Therapy: The Adrenal Cortex. J. A. M. A. 104: 2177-2182 (June 15) 1935.

10. Wilder, R. M.; Kendall, E. C.; Snell, A. M.; Kepler, E. J.; Ryneerson, E. H., and Adams, Mildred: Intake of Potassium an Important Consideration in Addison's Disease. Arch. Int. Med. 59: 367-393 (March) 1937.

11. Thompson, W. O.: Personal communication to the author.

histories recorded, for purposes of emphasis, in an informal manner. For the sake of uniformity I will assume that all the patients are men. Actually, of course, the disease more frequently affects women (1.6 to 1).

#### THE PATIENT IN A CRISIS OF ADDISON'S DISEASE

A patient is admitted to the hospital on a hot afternoon in July in a crisis of Addison's disease. He is too ill to be bothered with an exhaustive quizzing and is put to bed. The room is made as quiet and restful as possible. Any conversation regarding his case is carried on outside the room, for there is no illness more acute than this. During a brief wait for the necessary supplies for treatment the patient's wife, we'll say, tells the essential points of the history. Her husband had been well until three months previously, when he began to complain of loss of weight and strength. His appetite had "fallen off" and he had developed a real "craving" for salt. There had been some nausea and troublesome spells of hiccuping. She had noticed that his skin had changed in color; it was darker, and yes, come to think of it, she had noticed the appearance of many freckles which looked like india ink. In the last few days "since it got so hot" he had become much weaker and hadn't been able to go to work. Today he had vomited every-

TABLE 1.—*The Blood in the Crisis of Addison's Disease (Hypothetic Case)*

	Mg. per 100 Cc.				
	Normal Values	First Day	Second Day	Third Day	Fifth Day
Urea.....	10-40	120	50	60	40
Chlorides.....	570-620	440	450	520	500
Sodium.....	315-330	260	270	290	320
Potassium.....	16-22	26	24	23	20

thing she had given him and had had a troublesome diarrhea. He had then complained of severe epigastric pains and finally had "just collapsed" and they had brought him to the hospital.

The physician returns to the room. He examines the patient to determine two things: how low his blood pressure is and how dehydrated he is. The physician does not test the eye reflexes, he does not attempt to palpate the liver, kidneys and spleen, and he does not make a rectal examination. Furthermore he sees to it that the nurses forget the routine for admitting new patients; there is no bath, no rolling the patient around, no enthusiastic administration of an enema (patients suffering from Addison's disease also are made worse by purging). The attending nurses therefore enter into the conspiracy for kindly quiet.

The treatment tray has now arrived. It contains supplies for the collection of specimens of blood and for the intravenous administration of fluids. A needle is placed in the vein and enough blood is withdrawn for the determination of its content of sugar, urea and chloride. Blood may also be taken for analysis of sodium and potassium, although this is not urgent. Without withdrawal of the needle, the administration of a solution composed of 10 per cent dextrose, 1 per cent sodium chloride and 0.5 per cent sodium citrate is begun. To the solution is added 30 cc. of adrenal cortex extract. The patient is made comfortable and quiet again reigns.

But let us say that it is Sunday afternoon and the laboratory technician can't be reached immediately. It makes little difference. There is probably no other con-

dition in which examination of the patient and his blood is so unimportant and in which prompt and energetic treatment is so all important. Regardless of what the laboratory tests show, immediate treatment is the same. The reason for ascertaining the sugar content of the blood is that sometimes there is an acute hypoglycemia and large amounts of sugar are urgently needed. Dextrose should always be accompanied by salt. Allers, Nilson and Kendall<sup>12</sup> have shown that when dextrose alone is injected into adrenalectomized animals the initial hyperglycemia may be followed by a fatal hypoglycemia. The determination of the amount of urea and chlorides in the blood gives the physician a basis for judging subsequent improvement and guiding subsequent treatment. There are tests other than those of the sugar, urea and chloride content which are of considerable interest to students of this disease. Such tests are for blood volume and the amount of sodium and potassium in the blood. These tests, however, are beyond the reach of many physicians and laboratories. The patient I am now considering is found to have the usual changes in the chemical constituents of the blood (table 1).

Within an hour or so the patient is then found to have improved. His blood pressure has risen from 70 systolic and 50 diastolic to 86 systolic and 60 diastolic (the blood pressure often rises slowly and may never reach normal). The epigastric pains are less and he is much more responsive. He asks for a drink and is given fluids ad libitum. The intravenous administration of fluid is continued during the night and another 20 cc. of adrenal cortex extract is added to the solution. By morning he may have received 3 or 4 liters of this solution and 50 cc. of the extract. The value for blood urea has dropped to 80 mg. per hundred cubic centimeters and the plasma chlorides have risen to 480 mg. The patient is feeling infinitely better and the needle is taken from his vein. Now he may be bathed and given general nursing care, but only those things necessary for his comfort are allowed. He is now given "Addison's elixir"<sup>13</sup> to drink.

In the afternoon the patient again feels weak and 2,000 cc. of the solution is again given intravenously together with 20 cc. of adrenal cortex extract. No one can foretell how long it will be necessary to keep up this "emergency treatment." (Snell and Morlock<sup>14</sup> reported one case in which 255 cc. of adrenal cortex extract was required in nine days, during which time the patient received more than 20 liters of fluid intravenously; at the end of this period recovery from the crisis was complete.) In a few days the patient feels much improved and treatment is instituted which is similar to that to be described for the patient with chronic Addison's disease.

No single case, of course, can illustrate all the features of Addison's disease. For example, the crisis did not occur in this case until the patient had had symptoms for several months. In some cases a patient's crisis may be the first indication of his illness. Furthermore, while this patient's crisis responded rapidly to treatment, another patient might have been seriously ill for

12. Allers, W. D.; Nilson, N. W., and Kendall, E. C.: Studies on Adrenalectomized Dogs: The Toxic Action of Potassium, *Proc. Staff Meet., Mayo Clin.* 11: 283-288 (April 29) 1936.

13. To 1 liter of water 10 Gm. of salt and 8 Gm. of sodium citrate are added. This is flavored to taste with fruit-flavoring extracts (such as those of the Calumet Tea and Coffee Company, Chicago) and is kept well iced. The patient should drink at least 1 liter of this each day.

14. Snell, A. M., and Morlock, C. G.: Neurologic Symptoms Produced by Suprarenal Insufficiency: Report of a Case, *Proc. Staff Meet., Mayo Clin.* 11: 551-554 (Aug. 26) 1936.

a week or more. On the other hand, the patient's symptoms may be quite different from those recorded in this case. In this case the gastrointestinal symptoms were prominent. In Snell and Morlock's case, which has been previously referred to, there were so many symptoms related to the nervous system that an associated tuberculous meningitis was suspected. In still other cases the patient's symptoms may be largely associated with circulatory collapse. Each case is therefore different and requires individualized treatment.

Many deaths from the crisis of Addison's disease are due to delayed recognition of the condition or to a delay in treatment. Treatment must be both prompt and energetic. The importance of administering large amounts of sodium chloride cannot be overemphasized. During the crisis some patients may lose as much as 10 pounds (4.5 Kg.) in two days; this loss of weight is largely a loss of fluid, and fluids and sodium salts must be replaced.

#### THE PATIENT WITH ADDISON'S DISEASE WHO REQUIRES AN OPERATION

Surgery of even the simplest type was until recently denied patients suffering from Addison's disease. The extraction of a tooth was formerly sufficient to cause death. Fortunately this state of affairs no longer exists, and it is now possible to perform necessary operations, although, of course, there is an increased risk.

Briefly, let us say that this patient presents the typical appearance of Addison's disease but in addition is suffering from tuberculous destruction of the left kidney. It is considered advisable to remove this kidney. The patient knows that without this operation his outlook is very dark and he agrees to accept the chance which operation offers. The preoperative preparation requires at least a week and consists in placing him on a regimen which includes the low potassium diet (to be described later), the daily oral administration of a quart of "Addison's elixir" and the daily intramuscular or subcutaneous injection of 10 cc. of adrenal cortex extract. On the morning of the operation the patient receives by intravenous injection 2 liters of a solution of 10 per cent dextrose, 1 per cent salt and 0.5 per cent sodium citrate with 20 cc. of the extract. This procedure is repeated after the operation. The length of time that intravenous treatment and careful observation are necessary depends on the patient's condition and it may vary from several days to several weeks. On this regimen the patient makes a very satisfactory recovery. He owes his life to the close cooperation between surgeon and physician and to the energetic application of the measures just mentioned. Precision is demanded; there must be nothing slipshod in the treatment of such a patient as this.

Many patients who require operation for the destructive lesions of chronic tuberculosis suffer from a postoperative reaction which may be described as a "severe tuberculin reaction." This does not occur more frequently among patients suffering from Addison's disease, but it is more dangerous in association with this disease. The accompanying chart (of an actual case) demonstrates both the severe reaction, the temperature going to 105 F., and the energetic treatment which was required for more than two weeks' time.

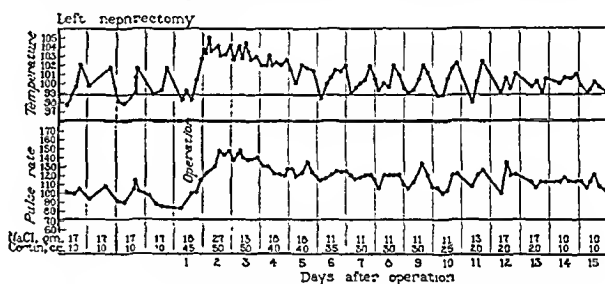
Patients with Addison's disease are also extremely sensitive to certain types of medication. A very small amount of insulin or thyroid extract may kill a patient with Addison's disease.

#### THE PATIENT WITH CHRONIC ADDISON'S DISEASE

This patient's skin is typically pigmented and he has experienced some of the other symptoms of the first patient who was admitted in crisis, but in a milder form. This is his third admission, and he enters the hospital under his own power.

He was first seen, we will say, in the spring of 1935, when the diagnosis of Addison's disease was made. He did not have a particularly severe form of the disease and it was not believed necessary to administer adrenal cortex extract. Ten Gm. of salt and 5 Gm. of sodium citrate were prescribed, to be taken daily by mouth. This was first given in the form of enteric-coated tablets, but when the patient did not improve, his stools were passed through a sieve and the tablets were recovered unchanged. This amount of salt and sodium citrate nauseated him when swallowed in capsules. "Addison's elixir" proved very satisfactory. Examination of the patient's lungs disclosed the presence of pulmonary tuberculosis, but there was no evidence of activity.

The patient's second admission was during the summer of 1937. He had enjoyed improved health since his first admission. When a bad cold developed he had become quite weak, but he had drunk 2 quarts



Addison's disease and chronic tuberculosis, showing severe postoperative reaction.

of the "Addison's elixir" each day instead of one and had made a rapid recovery. The reason he gave for returning at this time was "this hot weather has got me down and the salt won't pull me up."

Since the time of this patient's first admission it had been observed that potassium is very toxic to patients with Addison's disease. It was believed that the reason for the patient's continued difficulty was the fact that his food contained too much potassium. Sister Victor<sup>15</sup> was therefore asked to plan a diet which contained only small amounts of potassium. The suggestions and diet were as follows:

#### A PLAN FOR A DIET LOW IN CONTENT OF POTASSIUM

In arranging a diet restricted in potassium, it is necessary (1) to limit the selection of bread, cereal and sugars to the highly refined products, (2) to restrict moderately the use of milk, meat, fruits, vegetables, condiments and certain beverages, and (3) pending further investigation to cook meat and vegetables according to a special method whereby the content of potassium is reduced.

The special method suggested for the cooking of vegetables consists in cutting the vegetable into small pieces and cooking them in from six to eight times as much water as vegetable. Cooked according to this

15. Victor, Sister Mary: Diets Low in Content of Potassium (unpublished data).

method, the potassium is reduced from 60 to 70 per cent without a concurrent diminution of palatability. The special method suggested for the cooking of meat consists in cutting the meat into small pieces and cooking it in a so-called parchment paper bag in from six to eight times as much water as meat. By this method the content of potassium is reduced to a fourth of the original level while other nutrients and extractives which give flavor are retained in the meat.

Foods to be strictly avoided because of their high content of potassium include soups, broths and gravies containing meat stock or meat extracts, catsup, chili sauce, mustard and other meat sauces and seasonings, dried fruit and vegetables, bran, molasses, Postum and chocolate.

A plan for an adequate diet in which the content of potassium does not exceed 2 Gm. is given in table 2.

TABLE 2.—Adequate Diet in Which Potassium Does Not Exceed 2 Gm.

For breakfast:	Gm.	Approximate Measure
Orange or grapefruit.....	100	1 average-sized serving
Cream of wheat.....	15	1 average-sized serving
Egg.....	50	1
Butter.....	10	2 small strips
Bread, white (may be toasted).....	30	1 slice
Butter.....	10	1 square
Cream.....	30	½ cupful (scant)
For second meal:		
Meat, specially cooked.....	75	1 fairly large serving
Potato, specially cooked.....	100	1 serving
Raw vegetable (lettuce, celery, tomato, cabbage, Swiss chard or watercress)...	100	1 serving
Mayonnaise.....	15	1 tablespoonful
Bread, white.....	30	1 slice
Butter.....	20	2 squares
Fruit (apples, pears, strawberries or tangerines).....	100	1 serving
Cream.....	30	2 tablespoonfuls
Milk.....	200	1 glass
Cheese.....	20	1 cubic inch
For third meal:		
-	50	1
-	25	1 serving (½ cup)
Carrots, onions, turnips or squash.....	100	1 serving
Bread, white.....	30	1 slice
Butter.....	20	2 squares
Fruit (apples, pears, strawberries or tangerines).....	100	1 serving
Cream.....	30	2 tablespoonfuls
Milk.....	100	½ glass

Further details regarding this diet will be found in an article to be published by Sister Victor.

Lists of permitted substitutions and more detailed directions for the special cooking of meat and vegetables are given in a paper to be published in the *Journal of the American Dietetic Association*.

All foods should be weighed or carefully measured. One cup of weak coffee and two cups of weak tea are allowed daily. Salt may be used in generous amounts, particularly in seasoning the specially cooked foods. Pepper and vinegar are allowed in moderation. White sugar may be used liberally in beverages, on cereal and on fruits. Gelatin, either plain or flavored, may be used in salads or desserts. Carbonated beverages, such as ginger ale and coca-cola, as well as fruits prepared from synthetic beverage powders or crystals, may also be taken as desired. Any one of these beverages may be used as a carrier for the "extra" salt usually prescribed.

By using this plan as a basis and by making appropriate substitutions for the foods listed, many varied and attractive menus can be planned.

The patient improved rapidly and was dismissed, with the advice to follow the "low potassium diet" and

to continue to take at least 1 quart of "Addison's elixir" each day; this was to be taken during periods of stress such as are caused by hot weather and intercurrent infections.

On his third admission (say in May 1938) the patient reports that he has been much stronger since he has followed the regimen of "salt, citrate and low potassium diet" than when he simply took salt and citrate and ate a general diet. However, he says that he has not felt well lately and that he has returned for any additional suggestions for improving his health.

The only additional suggestion which can be given at this time is that he should be given adrenal cortex extract. This is likely to be more necessary when pulmonary tuberculosis is present. How much the patient should take will have to be determined by clinical trial in much the same manner as one determines the dosage of insulin for a diabetic patient.

The patient is found to respond satisfactorily to the subcutaneous or intramuscular injection of 5 cc. of extract every day. He is taught the technic of self administration, and by adding 0.5 cc. of 1 per cent procaine to the solution he suffers no discomfort. It may be possible for him to omit the injections on occasions, as, for instance, during the cooler months; it may also be necessary to increase the amount on other occasions, particularly during hot weather and in other periods of stress.

In discussing this case it may be said that the patient's first period of treatment with salt and sodium citrate alone was good; that the second period of his treatment with the valuable addition to the first regimen of a low potassium diet was better; that for this patient the addition of adrenal cortex extract to his previous regimen was additionally beneficial, and constituted, for this particular patient, the best treatment. There have been few patients who have not reported better health when, in addition to controlling the potassium content of the diet and securing adequate chloride and sodium, some adrenal cortex extract was taken. This applies especially to patients who have systemic tuberculosis.

#### THE PATIENT SUSPECTED OF HAVING ADDISON'S DISEASE

Patients may be suspected of having Addison's disease because of unusual pigmentation, hypotension or weakness—or be just "suspected" of having it. The patient I shall consider now is 18 years old. He is deeply pigmented, but he has just spent the summer as a counselor at a boys' camp and is so sunburned that his color is of no significance; he does not have any "india ink" freckles. He has entered the hospital because he felt quite weak toward the close of the camp period; the camp physician found his blood pressure to be low and the question of Addison's disease was raised. A period of two weeks has elapsed and he is already feeling much improved; however, his parents want the diagnosis proved or disproved. Nothing is found on physical examination or on study of the blood electrolytes to substantiate the diagnosis of Addison's disease. However, it is well known that this is not conclusive, and it is decided to carry out a "provocative test."

Provocative tests should be performed only in the hospital and only when facilities are adequate for immediate treatment if the patient does have Addison's disease and a crisis is induced by the test. Earlier tests, such as the one originally suggested by Harrop and his



co-workers,<sup>16</sup> had as their basis the fact that if Addison's disease was present the patient would be made worse by the withdrawal of salt from the diet and there would be positive changes in the blood electrolytes. However, some patients with unquestioned Addison's disease were found to withstand withdrawal of salt for appreciable periods. In later tests potassium was added to the diet; this accelerated the response if Addison's disease was present and greatly increased the reliability of the procedure. All these tests, however, required that the patient be made worse if the test was to be considered positive—and sometimes the patients were made very much worse. The risk of such a test, therefore, was not insignificant.

The patient I am considering is given the test outlined by Cutler, Power and Wilder<sup>17</sup> and this test will not be described in detail here. It has as its basis the determination of the concentration of chloride in the urine at the end of a brief (fifty-two hour) period of a standard "high potassium-low salt" regimen. This test is the simplest and, in experienced hands, the safest yet described. The results indicate that the patient does not have Addison's disease. He is therefore told that there is no evidence for the diagnosis of Addison's disease. He is also told that, while the test has given every indication of being very reliable, no test is 100 per cent accurate. He is dismissed with the reassurance that his symptoms probably were the result of overwork beneath a hot sun, with an insufficient intake of salt. We insist, however, that he cooperate with his local physician for future observation.

#### RESULTS OF TREATMENT

It is difficult to evaluate the results of treatment of Addison's disease. There are at least three factors which militate against acceptance of "survival time" as a criterion for conclusions: (1) Some patients have survived for years without treatment of any kind, one patient in a case reported by Snell<sup>18</sup> having lived for seventeen years without the advantage of "modern" treatment; (2) "modern" treatment has been available for clinical trial for an insufficient period of time, and (3) there are too many "variables," such as the different types of extract used and the varying degrees of cooperation between physicians and patients, to permit statistical comparison of different groups of cases as treated in different parts of the country.

Greene<sup>19</sup> appreciated these difficulties in collecting material for his recent excellent and thorough study, in which he reviewed his personal experience in thirty-four cases of Addison's disease. This had begun when he and Rowntree, with Snell, were studying these cases at the Mayo Clinic. Greene compared this group of thirty-four treated patients with 266 untreated ones and concluded: "The treatment added little to the apparent life expectancy in many cases but definitely prolonged life in a limited group of cases. The duration of the disease was more prolonged in this series of cases than has been reported with earlier methods of treatment."

Hausner, Snell and I<sup>20</sup> have recently compared the results of treatment in two groups of cases seen at the clinic. The first group of forty-six patients was seen between May 1, 1930, and Oct. 1, 1933. Adrenal cortex extract was introduced at the beginning of this period and treatment with sodium chloride in the middle of it. The second group, of forty-three patients, was seen between Oct. 1, 1933, and July 1, 1937. The use of sodium bicarbonate or sodium citrate was introduced early in this period and after May 1935 the low potassium diet was used. These two groups are more suitable for comparison than would be true of patients treated in different localities. The deaths at the end of the period that ended Oct. 1, 1933, numbered thirty (65 per cent); the deaths at the end of the period that ended July 1, 1937, numbered seventeen (40 per cent).

Of the seventeen patients in the second series who died, six were women, not one of whom was given the low potassium diet. Of the eleven men who died, only four were given what might now be termed "adequate" treatment. Perhaps a better idea of the efficacy of the newer type of treatment can be obtained from the knowledge that from Oct. 1, 1933, to Oct. 1, 1934, eight deaths occurred in seventeen admissions, whereas from July 1, 1936, to July 1, 1937, there were only three deaths in fourteen admissions, two of them in cases in which extensive tuberculosis had caused marked destruction of the vertebrae. Thus from a very brief analysis of these crude mortality statistics it is seen that definite improvement has followed the application of what might be termed the "latest" type of treatment.

Far more important than this type of analysis, however, is the knowledge which has been gained from observations that do not lend themselves to statistical study. By this I refer to the fact that all of us who have been treating Addison's disease for many years have noticed that, with our present method of treatment, most of our patients are feeling better than they ever did with previous types of treatment. Many are able to follow gainful occupations and to resume their place in society. One of our patients, a young woman who was rescued from a crisis which in former years would have resulted in her death, is now teaching school every day and is feeling quite well. Another young man is working every day and is the proud father of a son, the first patient with Addison's disease, of whom we have knowledge, who has become a father. We have no record of a woman with Addison's disease having had a child, but Kendall<sup>22</sup> has reported the successful delivery of healthy pups in the case of an adrenalectomized dog that had been maintained with sodium chloride and sodium citrate without adrenal cortex extract for months before and during gestation. Furthermore, patients with Addison's disease can, with this treatment, survive stresses which formerly would have caused their death. They no longer die in large numbers during the first hot spell of the summer. They now are able to have necessary surgical operations and can withstand minor intercurrent infections.

Patients with Addison's disease will continue to die from tuberculosis; until we learn more, others will die from causes which we do not understand. These deaths are unfortunate, of course, and serve as a challenge for future study. But there are many other deaths which

16. Harrop, G. A.; Weinstein, Albert; Soffer, L. J., and Trescher, J. H.: The Diagnosis and Treatment of Addison's Disease, *J. A. M. A.* 100: 1850-1855 (June 10) 1933.

17. Cutler, H. H.; Power, M. H., and Wilder, R. M.: Concentrations of Chloride, Sodium and Potassium in Urine and Blood: Their Diagnostic Significance in Adrenal Insufficiency, *J. A. M. A.* 111: 117-122 (July 9) 1938.

18. Snell, A. M.: Addison's Disease of Unusually Long Duration, *Proc. Staff Meet., Mayo Clin.* 9: 303-307 (May 23) 1934.

19. Greene, C. H.: Clinical Use of Extract of the Adrenal Cortex: Report on Thirty-Four Cases of Addison's Disease Studied Between 1930 and 1937, with a Review of the Literature, *Arch. Int. Med.* 59: 759-784 (May) 1937.

20. Ryneerson, E. H.; Snell, A. M., and Hausner, Erich: Behandlung der Addisonischen Krankheit und ihre Erfolge, *Ztschr. f. klin. Med.* 124: 11-30 (April 14) 1938.

are most regrettable because they could have been prevented if only knowledge which is already available had been utilized. Many of these deaths are due to negligence on the part of the patient. The patient must be taught that his safety depends on being just as vigilant as any patient with severe diabetes, or more so; he must follow his diet as closely, in order to avoid a dangerous intake of potassium, and take his sodium salts and extract just as religiously as the diabetic patient follows his diet and takes his insulin. He must avoid stresses and strains such as intercurrent infections and hot weather even more carefully and he must cooperate with his physician most faithfully.

Other deaths which could be prevented are those which follow the delayed recognition or incomplete treatment of an acute crisis. Again this emergency can be compared to the emergency of diabetic coma. The patient with Addison's disease must learn the warning signs of impending trouble and he must hasten to his physician, who must be prepared to treat him promptly and energetically. Not all patients in the crisis of Addison's disease can be saved, but most of them can.

Finally it should be stated, as mentioned previously, that there are some patients with Addison's disease who die in spite of energetic treatment, which includes all the suggestions mentioned here. They die in spite of the fact that chemical analysis of the blood indicates the return to normal values of the electrolytes. We do not know why they die. This is but one of the many unsolved problems concerned with Addison's disease.

No attempt has been made in this paper to create the impression that a cure for Addison's disease is being announced. Far from it. Progress is being reported, however, and it is believed that the best available treatment should consist in (1) the restriction of potassium in the diet, (2) the addition of sodium salts to the diet, (3) the use of an active extract of the adrenal cortex when it is needed, (4) the training of the physician and the patient in the details of treatment of the chronic state of the disease, and (5) the early recognition of acute remissions and their energetic treatment.

#### ABSTRACT OF DISCUSSION

DR. HERBERT M. EVANS, Berkeley, Calif.: Dr. Rynearson's report is particularly valuable to the profession because the malady is so rare that only a clinic like that at Rochester would have the opportunity of treating any considerable number of cases. It was at that clinic that the first conclusive evidence of the value of substitution therapy in the classic efforts of Rowntree and Snell with the extracts of a decade ago was shown. In addition to the advances as to the group of substances which may be designated as adrenal cortex principles, in which Kendall has had a significant part, equal attention has been paid the newer knowledge of the sodium-potassium metabolism in these patients. Recently, by the use of a new tool, Dr. Anderson of our laboratory, in conjunction with Lawrence, has confirmed the observations of Loeb, Harrop and others that adrenal subnormality involves the increased secretion of sodium and retention of potassium, the new tool being the use of tagged atoms of sodium potassium, those on which radioactive properties have been imposed by the cyclotron. In conditions of subnormality or destruction of the adrenal cortex, it is natural to look for subnormality in each of the known functions of the adrenal cortex. But for the present one can, perhaps, dismiss the capacity of this tissue to secrete estrogens and androgens or some substances related to the sterols of the sex hormone group. There appears to be no question that the primary object of concern here is the adrenal secretion of the vitally necessary substance which regulates the metabolism of

the electrolytes. From the recent studies of Long and others it is known that the same hormone plays an important role in the metabolism of carbohydrates. One of the most debated questions is whether the mediation of the pituitary in carbohydrate metabolism is to be explained solely by its control of this function of the adrenal cortex. That the anterior pituitary substance called the adrenotropic hormone definitely increases the production of this principle by the adrenal cortex has, I feel, been demonstrated in cooperative experiments between our laboratory and that of the Mayo Foundation. If the position taken by Long in his debate with Houssay of Buenos Aires is correct, it should be possible to produce permanent diabetes by over-conveyal of this hormone to normal animals as we were able to do with anterior pituitary extracts some years ago in Berkeley, and as has been recently more particularly studied by Young of London. This has not yet been accomplished, but it may be achieved in the near future.

DR. LESTER J. PALMER, Seattle: We have just heard a masterly summary of present knowledge of Addison's disease. I believe that the group of measures advocated—administration of salt and extract plus restriction of potassium—deserve endorsement and trial. This belief is based on the fact that the recommended regimen includes all the therapeutic agents indicated by our present knowledge. At the Mayo Clinic only eighty-nine cases have been observed in eighty-six months, or about one new case a month. In Seattle, in eight hospitals representing a capacity of 1,800 beds, where diagnoses have been indexed for periods varying from five to seventeen years, a diagnosis of Addison's disease has been recorded only twenty-six times. The bureau of vital statistics for the state of Washington (population 1,700,000) shows that for the five year period 1933-1937 Addison's disease appeared as a primary or contributory cause of death only twenty-five times. I believe these figures are really higher than the true figures would be. It should be mentioned that there is duplication of cases in the various series. At least two of the Seattle cases are known to be included in the Mayo Clinic group. Is this low incidence of Addison's disease apparent or real? Are patients dying in acute crises of Addison's disease, either as medical deaths or following surgical procedure, without being recognized? There is available the method of subjecting the suspected patient to test conditions outlined by Cutler, Powell and Wilder, which is apparently a safer procedure than that previously employed. May it not be possible that earlier diagnoses will become a fact and that a not inconsiderable number of patients who would previously have died in unexplained circulatory collapse will now be recognized as having Addison's disease?

DR. W. O. THOMPSON, Chicago: I should like to emphasize what Dr. Rynearson has said about the treatment of a crisis, which in Addison's disease presents an emergency fully as great as if not greater than that presented by diabetic coma. When a crisis has advanced to the point of unconsciousness, it is usually impossible to revive the patient with any form of therapy. I should like to stress the importance of large doses of adrenal cortex extract as well as of sodium salts in the treatment of a crisis in Addison's disease. I have used as much as 150 cc. of adrenal cortex extract in the course of the first twenty-four hours, a much larger dose, of course, than is required later for maintenance. Dr. Rynearson has already told you that at the Mayo Clinic they administer as much as 60 cc. of extract in the course of the first hour or two and then give an additional 30 or 40 cc. Early in a crisis a patient may be revived by the use of 40 or 50 cc. of extract alone, but if a crisis is well advanced it is necessary to add sodium salts, because the reserve of sodium in the body is depleted.

DR. EDWARD H. RYNEARSON, Rochester, Minn.: All of us are grateful to Dr. Evans for his remarks. The greatest advances in the treatment of Addison's disease have come from the laboratories and I am hopeful that work now in progress in Dr. Evans's laboratory may help further. Many patients suffering from either overfunction or underfunction of various endocrine glands enjoy periods of spontaneously improved health. Dr. Palmer referred to an interesting patient. If we can accept the diagnosis of Addison's disease as accurate, then we should be able to prophesy that with his present careless

attitude he is riding for a fall. If I were asked to guess the explanation for this patient's improvement, I should say that he probably has had some regeneration of the adrenal cortex. This is not unknown. Dr. Thompson's discussion is appreciated because of the fine work he has done in the study of this disease, which has just been reported before the the Association for the Study of Internal Secretions.

## ANATOMIC FACTORS IN PATHOGENESIS AND TREATMENT OF URETHRO- CELE AND CYSTOCELE

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The levator ani muscles and their fascia have been generally conceded to be the essential supports of the urinary bladder.

Cystocele has been recognized to be a true hernia of the bladder—more specifically, a herniation of the fundus and trigon, which are those parts in association with the anterior vaginal wall.

The degree of incontinence of urine is evidently dependent on whether there is a urethrocele, which may or may not be associated with a cystocele, and varies enormously in different cases. It has been generally accepted that the specific anatomic lesion responsible for the incontinence is relaxation of "the sphincter muscle," yet most physicians have had a rather vague picture of the sphincteric anatomy and a very meager knowledge of the physiologic mechanism of vesical control.

The modern conception of correction of a cysto-urethrocele with incontinence has been that of repair of a hernia, with reinforcement of the urethral and trigonal support; but the anatomy of the structures used in the support of the mobilized and replaced and more or less incontinent bladder and urethra has not been well understood.

I believe that we have found answers to the major queries which arise in relation to these problems. The answers were inadequate after a concerted attack from the combined points of view of the anatomist and the gynecologist, despite painstaking expert dissection of the pelvis of five selected female bodies; it was only after a sixth dissection was made, this time from within the pelvis in the case of a remarkably favorable specimen, that the anatomic relationships were revealed clearly and unmistakably.<sup>1</sup> The accompanying illustration is Tom Jones's depiction of the anatomy of cysto-urethrocele as viewed from the vaginal aspect at operation.

### ANATOMY

Let us view the dissected pelvis from within, with the viscera, the parietal peritoneum and the pelvic cellular tissue removed, only the lower part of the bladder, much of the vagina, and the terminal portion of the rectum remaining: The endopelvic fascia is readily recognized, without effort, as the reflection upward on the viscera of the firm fascial layer covering the pelvic

floor. An aponeuroticofascial ridge sweeps forward from the region of the spine of the ischium and soon divides into an inferior fascial arch, the white line, and the somewhat more superiorly placed, slightly curved arcuate ligament.

The dissection, if skilfully performed, reveals firm fascia ensheathing the bladder and the vagina, with a more delicate similar envelop for the rectum. The fascial tubes are the endopelvic fascia.

The anterior vesical reflection of the endopelvic fascia, i. e. the pubovesical fascia, creates a vesical sling from the pubis. The portion of the enveloping vesical layer on the vaginal aspect of the bladder is in intimate relation with the musculature of the bladder wall. A similar, less marked relationship is found between the vaginal reflection of fascia and the musculature of the vaginal wall. Thus there is a double layer of fascia between the bladder and the vagina, and each receives some muscle fibers from the wall of its adjacent viscus. The ensheathing fascia surrounding the viscera is firm and adds materially to their support. It begins on each viscus at the bottom of the pelvic cavity, and therefore the lowermost vagina and the lowermost urethra are not enveloped by the endopelvic fascia.

On removal of the fascia which lines the pelvic floor and its visceral reflections (the endopelvic fascia) and on excision of the viscera to a lower level, the levatores ani and coccygei, originating from the posterior aspect of the superior pubic ramus, the arcuate ligament (not the white line) and the spine of the ischium are seen to pass medially and backward bilaterally, chiefly antero-posteriorly, toward the anococcygeal raphe and the sacrum. As the levatores ani sweep past the viscera, broad straplike bands of fibers are inserted into the lateral aspects of the rectum and the vagina, furnishing firm supports; an almost negligible number of strands are inserted into the posterolateral aspects of the urethra.

With the bladder excised down to the vesical neck, the urethra is seen as a thick walled shaggy tube, 1 cm. or more in diameter, its wall comprised of intrinsic muscle fibers which constitute the internal sphincter, naturally in a state of tonic contraction and in control of the normal accumulation of urine. One now sees the uterosacral ligament-like portions of the urogenital diaphragm arising from the pubis and firmly inserted into the lateral aspects of the urethra.

The urogenital diaphragm, or triangular ligament, at a lower level and anterior to the pelvic diaphragm, completes the pelvic support. With the urethra and the right half of the vagina excised to a still lower level and the levator ani and fascia removed from the right side, there is exposed the large ischio-rectal fossa, anterior to which is the broad firm transverse musculo-membranous urogenital diaphragm arising from the inferior rami of the pubis and ischium, stretched across almost the entire anterior half of the pelvic outlet at right angles to the vaginal canal. The muscles of the urogenital diaphragm constitute the external sphincter of the urethra. The muscle fibers of the diaphragm are directed chiefly transversely toward the midline, where they encounter the vagina and the urethra and are inserted firmly into them. As they meet the urethra many fibers are applied to it, inserted lengthwise along its distal portion, difficult to distinguish from the urethral fibers of the internal sphincter. A most prominent portion of these fibers in intimate relation with

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1. Three anatomically accurate illustrations of this dissection in its various stages will accompany another contribution, now in preparation.

the urethra consists of paired bands of the glistening superior fascia and underlying muscle fibers of the diaphragm arising bilaterally from the inferior pubic ramus near the midline and inserted into the anterolateral aspects of the urethra, presenting a miniature counterpart of the uterosacral ligaments. Some of the fibers of the diaphragm reach the midline beneath the urethra, but they form an insignificant layer here, in contrast with the lateral firm portions of the diaphragm.

It is my purpose to avoid discussion of a controversial subject; yet I must mention that microscopic study was made of tissue removed from several patients during operations on cystoceles. Generous blocks of firm supporting tissue excised from various locations during the operative dissections invariably contained much con-

ligaments, which are nothing more nor less than reflections of fascia accompanying the uterine artery and vein.

Childbirth injuries are often comparable with those of an explosion—a generalized stretching, sagging and dragging. With such a lesion it is self evident that all the supporting tissues, far and near, play a part in the pathologic picture.

Uterine prolapse alone may occur with nothing more than stretching of the fascia which lines the pelvic floor, the uterovaginal fascial envelop with its associated muscle fibers and the all important perivascular fascia, known as Mackenrodt's ligaments, which extend, fan shaped, within the folds of the bases of the broad ligaments from the sides of the cervix and uppermost vaginal wall to become attached to the lateral bony walls of the pelvis.

If the lesion is essentially a cystocele or a cysto-urethrocele the disorder is more localized than with uterine prolapse, is lower and more anterior and may spare Mackenrodt's ligaments and the levator ani muscles including their straplike attachments to the lateral aspects of the rectum and the vagina. And, contrary to accepted belief, an extensive cystocele may develop solely as a result of rending and tearing and relaxation of only the pubovesical fascia and the fascial layers between the bladder and the vagina together with the urogenital diaphragm.

In the case of urethrocele alone, stretching of the fascia which ensheathes the intrapelvic urethra and tearing of the urogenital diaphragm away from the pubic bone are the dominant and sometimes the exclusive lesions, with resultant prolapse of the urethra downward and forward.

#### NERVOUS MECHANISM OF THE BLADDER

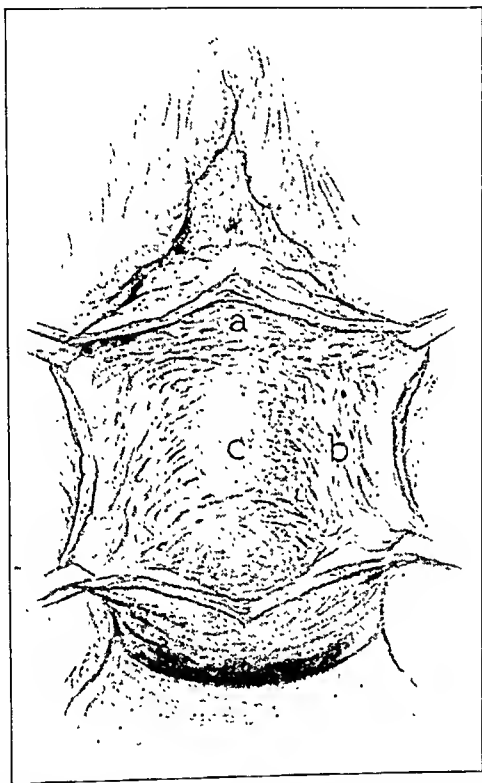
The nerve supply and nervous mechanism of the bladder have been worked out fairly satisfactorily, although incompletely:

The sensation of pain travels exclusively through the sympathetic fibers, which pass upward by way of the presacral nerve (the superior hypogastric plexus).

It appears that the mechanism concerned with normal filling and emptying of the bladder resides chiefly in the involuntary muscle of the bladder wall, which includes the circular thickened band of fibers of the vesical neck and urethra, termed the internal sphincter.

The motor nerve supply concerned with this mechanism comes through the paired erigens nerve, otherwise known as the erectile or pelvic nerve, the fibers of which emerge from the spinal cord in the anterior roots of the second, third and fourth sacral nerves and reach the bladder by way of Frankenhäuser's plexus. The afferent impulse to the cord concerned with the normal act of micturition probably travels through the pudendal (pudic) nerve, which reaches the perineum through Alcock's canal and carries afferent fibers to the cord through the second, third and fourth posterior sacral roots. The pudendal nerve also innervates the muscles of the urogenital diaphragm, including the external sphincter of the urethra.

Normally, the internal vesical sphincter is in a state of tonic contraction and controls the accumulation of urine. When the bladder becomes full an impulse to the cord stimulates the erigens (parasympathetic) nerve, with resultant relaxation of the internal sphincter, and at the same time a contraction of the remaining musculature of the bladder wall, thus emptying the bladder.



Pathologic anatomy of cysto-urethrocele as viewed from the vaginal aspect at operation: a, urogenital diaphragm, attenuated beneath the urethra and thick laterally; b, musculo-fascial vaginal envelop; c, musculo-fascial vesical envelop.

nective tissue, almost always in preponderance over the muscle fibers; the latter varied in amount according to the individual patient and the region from which the tissue was excised.

#### PATHOGENESIS OF CYSTO-URETHROCELE

What happens when a major lesion develops, such as a uterine prolapse together with a cystocele?

With the traumatism of childbirth there is a rending of the supporting pelvic tissues, both muscles and fascia, and thenceforth the pelvic viscera sag. The lesion varies according to numerous undiscussed factors involved, such as the size, structure and axis of the bony and ligamentous framework and the size of the fetus, the presentation and the method and rapidity of delivery. Anatomic dissection emphasizes the importance of the fascial supports; a fact borne out by clinical experience when one demonstrates at complete hysterectomy the important supporting power of Mackenrodt's

The external sphincter of the urethra plays no part in the normal control or emptying of the bladder; but it is called into play when the bladder becomes full, and it is all important in supporting the function of the internal sphincter in protecting against sagging and incontinence.

#### PRINCIPLES OF TECHNIC IN REPAIR OF URETHROCELE AND CYSTO-URETHROCELE

If there is a cysto-urethrocele alone, blunt dissection along fascial planes between the protruding bladder and the vagina and between the bladder and the uterus suffice to mobilize the herniating bladder.

The invariably recognizable musculofascial tissues between the vagina on one side and the bladder and urethra on the other are readily isolated by blunt dissection at operation and consist of the musculofascial components of the urogenital diaphragm below and the ensheathing layers of urethrovaginal and vaginal fascia above, the double layered urethrovaginal fascia strengthened by muscle fibers derived from these viscera.

The freed bladder may be held in replacement by suturing the bluntly dissected musculofascial supports. The union is accomplished by midline interrupted sutures, with more or less attachment to the uterus to accomplish satisfactory closure of the hernial opening. The more thoroughly one dissects the tissues well up over the urethra in the direction of the meatus, with suturing of the thinned-out and retracted musculofascial tissue lateral to the urethra to make a support beneath it, the more one may be assured of control of incontinence; unfortunately there is associated a longer period of time during which the patient will require catheterization.

Other lesions commonly accompany the cystocele. Relaxed Mackenrodt's ligaments may be strengthened by cutting the bases of the broad ligaments and suturing them together anterior to the cervix. For smoothness of workmanship in this detail, it is our custom to make a preliminary denudation of the overlying vaginal mucosa. The supporting pelvic floor should be repaired as a routine.

#### SUMMARY

Direct etiologic factors in the development of cysto-urethrocele are (1) relaxation of the fascia that lines the floor of the pelvis together with injury of its reflections (the endopelvic fascia), the bladder and the urethra, and the vagina, to the level of the floor of the pelvic cavity; (2) separation of the urogenital diaphragm from its firm attachment to the pubis, or stretching of the diaphragm, which permits the urethra to prolapse downward and forward.

Indirect etiologic factors in the development of cysto-urethrocele include (1) injury of the fascial reflections of endopelvic fascia which ensheath the vagina posteriorly and the rectum, (2) relaxation of the strap-like bands of the levatores ani which firmly support the lateral aspects of the rectum and the vagina, (3) relaxation of more distant supporting structures, including the important Mackenrodt's ligaments and the levatores ani, especially the perineal portions of the latter.

In the controversial field concerned with the relative amount of fascial and muscle tissues present at dissection of a cysto-urethrocele, anatomic and clinical dissections and histologic study of excised pieces of tissue lead to the following deductions: The supporting tissue is predominantly fascia, but there is a generous amount

of associated muscle fibers. Explanation of the derivation of this supporting tissue is as follows: The support in the region of the lower part of the urethra consists of the firm musculofascial tissues of the urogenital diaphragm, a part of which comprise the external sphincter; envelopes of supporting fascia reflected from the fascia of the pelvic floor encase the bladder and upper part of the urethra and vagina, and these, particularly on the vesical aspect, are strengthened by muscle fibers derived from these viscera.

The repair of urethrocele can be best accomplished from the vaginal approach by blunt dissection along lines of musculofascial cleavage, according to the general principles of dissection, with musculofascial support derived from the tissues which have been described, according to the general principles of repair of hernia.

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#### ABSTRACT OF DISCUSSION

DR. W. T. DANNREUTHER, New York: The authors have clearly outlined the important factors concerned in injuries to the bladder and urethra resulting from birth trauma and indicated the structural principles involved in reparative operations. They have correctly called attention to the fact that a urethrocele is the prototype of a cystocele. The terms "urethrocele" and "prolapse of the urethra" are sometimes erroneously used interchangeably. A urethrocele involves all the walls of the urethra, whereas a prolapse is merely a protrusion of the mucosa through the meatus. This presentation is undoubtedly based on original dissections, which again emphasizes the importance of the endopelvic fascia as a supporting structure. It demonstrates that a cystocele without uterine prolapse may develop despite the integrity of the cardinal ligaments. Urine is normally accumulated in the bladder under a pressure of less than 10 mm. of water and is checked at the vesical orifice partly by the internal sphincter, which is simply a part of the detrusor smooth muscle fibers, and partly by the external sphincter, composed of striated fibers. Only the latter can be contracted voluntarily to prevent micturition when the bladder is full. The physiologic coordination of the detrusor muscle fibers and external sphincter, as well as normal balance of sympathetic and parasympathetic nerve impulses, is responsible for proper bladder control. Dysfunction eventuates in abnormal micturition. I agree with the authors that in doing plastic operations the dissection should be carried well over the urethra and the externally retracted tissues approximated snugly beneath it. In most cases of incontinence, two plicating mattress sutures of Pagenstecher linen, placed in the outer margins of the urethrocele itself, beneath the line of catgut sutures, will be found useful. Fixation of the anterior vaginal wall to the area on the cervix from which the prolapsed bladder has been freed and dislocated upward is prerequisite for the cure of large cystocele.

DR. G. D. ROYSON, St. Louis: The type of cystocele and urethrocele, interdependent conditions, that I wish to add has to do with this trigonal muscle. This particular injury may be present when no cystocele or urethrocele can be made out from the outside, but can be recognized through a cystoscope aimed at the point where the muscle crosses the internal sphincter. When the patient strains, if this type is present, the floor of the bladder will be seen to go down, but the internal sphincter will not be materially depressed with it. In other words, as a result of the tear of the trigonal muscle near this point, the patient has a functioning cystocele only when she voids. This means that the trigon is functionally sheared from the internal sphincter, which becomes relatively free and therefore contracts, raises itself above the floor of the trigon and never is stretched downward or opened when the patient voids. This injury may be present with no other evidence of tearing or stretching of the musculofibrous bladder or urethral attachments. Consequently, the following changes occur: hyperplastic



urethritis and even caruncles, a protective mechanism of the internal sphincter due to friction of the mucosa within the spastic sphincter; also, secondarily, there is trigonal congestion with "sheep's wool" changes, i. e., desquamating epithelial cells or simply a passive congestion of the trigon extending over a long period. The presence of a caruncle may indicate dysfunction of the urethra. The liberated urethra shows various degrees of urethrocele. This relative liberation of the urethra is due to more or less complete functional section of the trigonal muscle, when the urethra is pushed upward and forward and its midsection is buckled or curved downward. The fixed external meatus becomes constricted and may occasionally form fibrous tissue and become strictured. Therefore there are a spastic external sphincter, a spastic internal sphincter, congestive trigonal changes, a change in the internal sphincter due to mucosal friction, and often a constricted meatus, fixed by the ligaments so well described by the authors. Dr. D. K. Rose of the Washington University School of Medicine and I have reported a method of repair of this type of injury which can be incorporated in any standard pelvic operation in suitable cases. This method aims to reunite the urethra functionally to the trigon. The operation deals principally with the longitudinal fibers mentioned and consists in inserting our sutures near the meatus, carrying them back to the midtrigonal region; then reinforcing the junction of the urethra and trigon and further reinforcing by repairing any posterior weakness in the bladder supports.

DR. JOSEPH L. BAER, Chicago: Some of these women who have been operated on and reoperated on still have either a complete incontinence or a degree of impairment which is almost as bad as incontinence itself. For these women there appeared in the *American Journal of Urology* approximately half a year ago an excellent and well illustrated article written by Dr. Lowsley. I have tried the operation twice since seeing the article. The last time was before the Chicago Gynecological Society. The essence of the operation is that an incision is made in horseshoe fashion enveloping the urethra and separating it from the symphysis pubis, a downward dislodgement, in other words, of the entire length of the urethra under procaine hydrochloride and epinephrine anesthesia, to which gaseous anesthesia may be added if desired. The entire space between the urethral and para-urethral tissues is dissected away from the symphysis pubis laterally, as wide as need be, until the junction of the bladder and urethra is freely exposed. Then, with the use of ribbon catgut, the lateral columns of the bulbus cavernosi muscles are brought together anterior to the urethra at the vesico-urethral junction in either a single tie or two such sutures, if desirable. Then the tissue over that is closed in the usual fashion and the horseshoe incision likewise closed with interrupted stitches and, if desired, a bit of rubber drainage. It seems to be efficient for those women in whom there has been considerable loss of tissue and in whom previous procedures by way of the vagina have failed.

DR. ARTHUR H. CURTIS, Chicago: From Dr. Royston's discussion I judge there is still some confusion relative to the anatomy of the internal sphincter. The musculature of the bladder wall constitutes the internal sphincter, which is not a circular band at the neck of the bladder but a thickening of the muscle fibers beginning at the neck of the bladder and extending throughout the urethra, reenforced by fibers from the urogenital diaphragm, which constitutes the external sphincter.

**Number of Defectives Sterilized.**—Of the twenty thousand persons operated on in the United States under the sterilization laws since 1907, the great majority have been mental patients. Only about one third of the total were feeble-minded. It can be readily seen, therefore, that the number of mental defectives sterilized over a period of twenty-three years represents but a small fraction of 1 per cent of the present total in this country. Assuredly, then, sterilization has thus far proved a striking failure as a large-scale measure for cutting off defective stock. —Deutsch, Albert: *The Mentally Ill in America*, New York, Doubleday, Doran & Co., Inc., 1937.

## LEVELS OF CONTROL IN THE TREATMENT OF DIABETES MELLITUS

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AND

ROBERT L. JACKSON, M.D.

IOWA CITY

For twelve years the treatment of diabetes mellitus in children in our clinic has been based on the premise that the diabetic child has normal propensities for health as long as his diabetes is controlled and that therapy should be based on the maintenance of physiologic conditions as far as possible. Prescribed diets have been planned to meet liberally all requirements for growth and activity. The dosage of insulin has been designed to control hyperglycemia at all times. Whereas the instability of the diabetic child does not permit the fullest attainment of this ideal, continuous approximation of normal blood sugar levels has been our criterion in judging the success of management. Effort has been made to avoid glycosuria of any degree as a regular or frequent occurrence. A regimen of management has been evolved which has made such a level of control possible when suitable supervision of the patient is maintained.

When protamine zinc insulin became available and reports of its superiority appeared in the literature, we were led to hope that through its use we might lessen the number of daily injections without lowering the level of control which had previously been established. For over a year the modified insulin has been used for selected hospitalized diabetic children. The regimen provided for strict control of the patient's activities as well as his diet and insulin. Competent laboratory personnel made analyses of all urine passed and of the sugar content of the blood at intervals throughout the twenty-four hours several days each week. Exercise was supervised and standardized as far as possible. From the technical standpoint, the routine employed was adequate to certify the validity of the data obtained. Preliminary to the use of modified insulin, each patient was observed under the earlier regimen with regular insulin, and the requirements of the latter had become essentially stable. The preliminary period averaged four weeks and for some patients was much longer. During this period, once the patient had become aglycosuric a marked decline was noted in the total insulin needed to maintain normal blood sugar levels with a constant diet. Chart 1 illustrates the time factor involved in this process of stabilization and the degree of spontaneous reduction in the requirement of insulin which may be observed. To establish and maintain such stability it was necessary to give from two to four injections daily in accordance with a previously established distribution and to readjust the total dose frequently.

When these patients were transferred to protamine zinc insulin, great difficulty was encountered in attaining levels of control as good as those which had previously been established for the same subjects with regular insulin. If the urine was kept free from sugar the patients tended to have hypoglycemic shock of a type far more severe than that previously observed. With careful supervision it was possible to establish passable control

From the Department of Pediatrics, State University of Iowa College of Medicine.  
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with the protamine zinc product for the children who required relatively small amounts of insulin; yet even with these children the status was less predictable than when regular insulin was used. At the termination of the study we were forced to conclude that the use of protamine zinc insulin for diabetic children is not compatible with the maintenance of physiologic levels of the blood sugar.

It is not our desire to condemn the use of modified insulins or to close our minds to their ultimate value in the treatment of children with diabetes. Our inability to use protamine zinc insulin successfully must not be accepted as evidence that in the hands of others it may not be used with success. However, other observers have reported difficulties similar to those we have encountered. The discrepancy between the favorable and the unfavorable reports is explainable by the differences in objective of treatment in various clinics or by the level of control maintained in the management of the disease.

At the outset of any discussion of the treatment of diabetes one should distinguish between the elderly patient, whose objective is to pass his declining days in comfort, and the younger patient, who wishes to participate in the various activities of life. Moreover, separate consideration must be given to the child or adolescent patient, who still has a capacity for growth, as opposed to the adult, who has achieved his maximum physique. If the patient offers no prospects of salvage, one may justifiably pursue a passive and lenient form of therapy. If, on the other hand, he has a capacity for health and a fair normality of existence, the physician should feel an obligation to treat the diabetes so effectively that it will offer a minimum of obstruction to his future progress. In treating the child, the routine

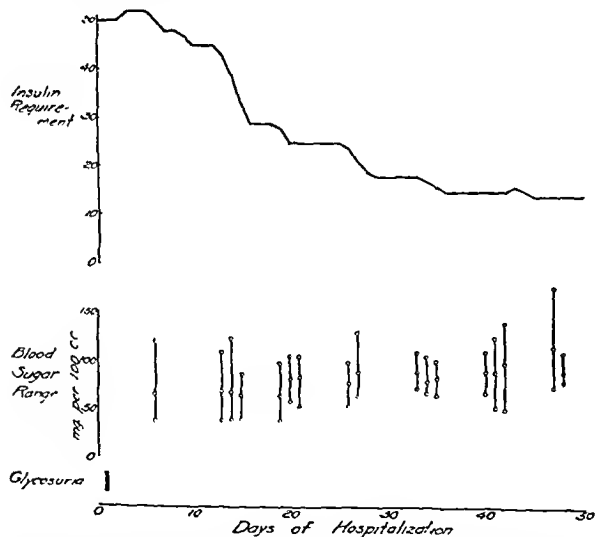


Chart 1.—The progressive and prolonged decline in the insulin requirement with a constant diet and maintenance of aglycosuria. The data are taken from the record of an 11 year old girl with diabetes of recent onset. The blood sugar values represent the maximum, minimum and average of nine determinations for each day where indicated.

and plan of control must be especially stringent if the patient is to have an opportunity for normal growth in body and in mind. A regimen which meets all needs of a child can be applied with equal value to the adult patient, whereas a lax or unphysiologic type of management which may be considered appropriate for certain mature patients will prove inadequate and a handicap

in the care of the child. This distinction will not be immediately apparent clinically; the child may subsist without obvious handicap, and the parents and the attending physician may be led to believe that an ineffective regimen is meeting all the patient's needs. Long range studies are necessary to determine the relative worth or safety of different methods of treatment, and many factors must be considered in the establishment of adequacy of control.

In treating the patient with diabetes, one cannot hope for a cure. Under the best of management the patient's defect will persist in a significant degree, and realization of this must be kept uppermost in all future planning. The goal of treatment should be the conservation of the deficient sugar - handling function and the direction of the patient's medical and social status so that

he may lead a full life. The ultimate outcome of the disease will be determined through the adequacy of the regimen to promote normal functioning of the body throughout and to prevent complications and degenerative sequelae. With adequate control the diabetic child has the propensity for normal growth, development and maturation. He will have the strength and ability to participate in the activities of his normal associates as long as they do not conflict with the regimen which his management necessarily imposes. He need not be subject to disastrous complications or sequelae, such as acidosis, diabetic cataracts, gangrene or hepatomegaly, if he adheres continuously to a suitable regimen. With a lax form of management it may appear that all these objectives are being attained; minor depression of growth or the development of degenerative changes may not become clinically apparent for a long period. Leniency in control may please the patient and his parents and may simplify the work of the physician, but ultimately it will result unfavorably for the patient.

The patient's sense of well-being and his clinical manifestations do not offer a safe guide as to the adequacy of his management. His sugar-handling mechanism may be markedly decompensated without causing noteworthy symptoms. The physician must interpret to the patient or his parents the need for continued periodic laboratory studies to confirm the level of control.

Many physicians treating patients with diabetes mellitus have no facilities for the determination of blood sugar and judge the progress of their therapy by occasional urinalyses and the patient's clinical manifestations. Under this type of regimen, glycosuria is common and inevitable. Frequently only a single voiding is tested, and the results do not reflect the status of the patient. Increasing severity of the diabetic state

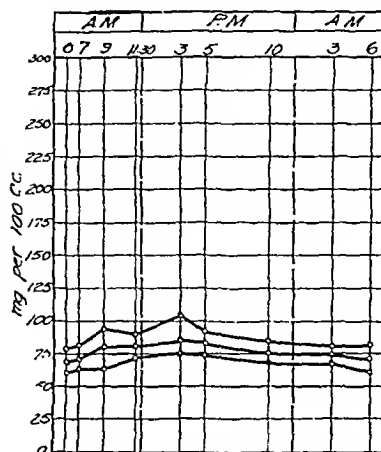


Chart 2.—Diurnal fluctuations of the blood sugar level in six nondiabetic children receiving diets similar to those of diabetic children but without administration of insulin. Nine determinations were made for each subject during two different twenty-four hour periods. The upper and lower curves represent the maximum and minimum values observed at each hour; the center curve represents the average of the twelve determinations.

will not be detected until it becomes apparent through aggravation of the patient's symptoms. This approach is negative and fails to offer the patient the safeguards which modern methods of treatment make available.

Some clinicians treating diabetes have questioned the harmfulness of mild glycosuria, even though it is persistent. They reason that, if the patient utilizes sufficient sugar for his body's needs, mild wastage can be ignored. This attitude is indefensible when one is out-

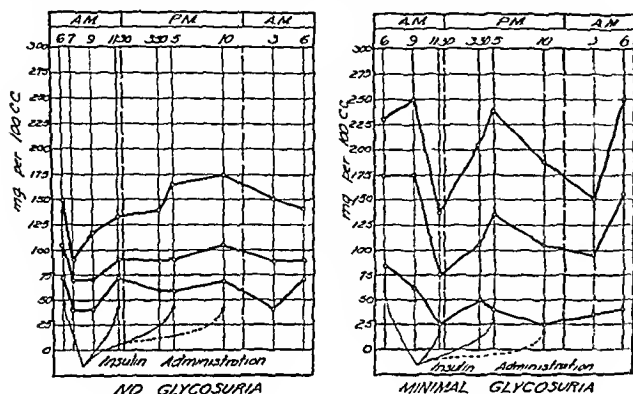


Chart 3.—Diurnal blood sugar fluctuations of mildly diabetic children receiving less than 30 units of insulin a day in three or four divided doses. The curves at the left represent seventeen days' study of four subjects who were aglycosuric. The curves at the right represent ten days' study of three patients who were excreting minimal amounts of sugar, not more than 5 Gm. a day. The upper and lower curves represent the maximum and minimum values observed at each hour; the center curve represents the average of all determinations made at that hour.

lining suitable management for the child with diabetes, since it is unnecessary, is theoretically unsound and clinically leads to the complications and degenerative sequelae which characterize uncontrolled diabetes.

Charts 2, 3 and 4 illustrate that even the mildest glycosuria is not compatible with the maintenance of satisfactory blood sugar levels. Chart 2 shows the average diurnal fluctuations in the blood sugar level for a group of nondiabetic children. Chart 3 shows similar values for two groups of mildly diabetic children; some were aglycosuric and others were excreting a daily maximum of 5 Gm. of sugar. Chart 4 offers a similar comparison of blood sugar levels for children with moderately severe diabetes in the absence and the presence of minimal glycosuria.

Glycosuria is the sequel to hyperglycemia. The blood sugar concentration must reach abnormal levels before sugar appears in the urine. Before such levels are attained, the body's defenses will have attempted to prevent them and have failed. Such failure of a physiologic function constitutes a state of decompensation and is associated with pathologic fatigue of the agencies concerned in the maintenance of that function. Such exhaustion of the sugar-handling function accounts for a considerable part of the patient's insulin defect. This can be demonstrated through the degree of recovery observable in the diabetic patient brought under proper control; with the continued use of suitable amounts of insulin, the dose must be successively reduced as the exhaustion component becomes corrected through rest.

With prolonged hyperglycemia, the diabetic patient acquires a higher renal threshold for sugar. As a result he may remain persistently hyperglycemic without noteworthy glycosuria. Abnormally high levels of blood sugar, with or without glycosuria, cannot be considered physiologic, and one may expect that over long periods the chemical alterations in body fluids will lead

to degenerative conditions in the tissues. Certain sequelae of diabetes, such as cataracts, hepatomegaly and xanthoma diabeticorum, are explainable on this basis. Ophthalmologists recognize the fact that the optical characteristics of the eye vary with the sugar content of the body fluids. The increased susceptibility of the diabetic patient to local infections is thought to be related to the effect of a high level of blood sugar. In our series of over 200 diabetic children, the only degenerative complications have occurred in those who had such manifestations at the time they first came under our observation or who failed to follow the prescribed regimen. Those who have shown reasonably good cooperation have not only been free from noteworthy complications and sequelae but frequently have attained a level of health superior to that of brothers and sisters living under the same adverse socio-economic conditions.

Attempts should be made to keep the diabetic patient free from glycosuria at all times and to avoid hyperglycemia. This goal may not be attainable, but the physician may approach it more nearly than is generally recognized. With a constant type of diet and with the doses of insulin distributed suitably throughout the twenty-four hours, the patient should avoid marked fluctuations in the blood sugar level. Under these conditions the physician can instruct the parent to maintain the child's doses of insulin at as high a level as is possible without the production of shock. This routine, checked through frequent urinalyses of samples voided at different times of the day, will safeguard the patient against undetected hyperglycemia. When mild shocks occur, they are easily controlled by the oral administration of minimal amounts of sugar. Such a regimen approximates physiologic conditions as closely as the patient's state will permit.

As a criticism of this strict level of control, the physician may with justice question whether the patient will adhere to such regimentation. We have found that it is no more difficult to work from the stated objectives than from a lower level of treatment. Each patient

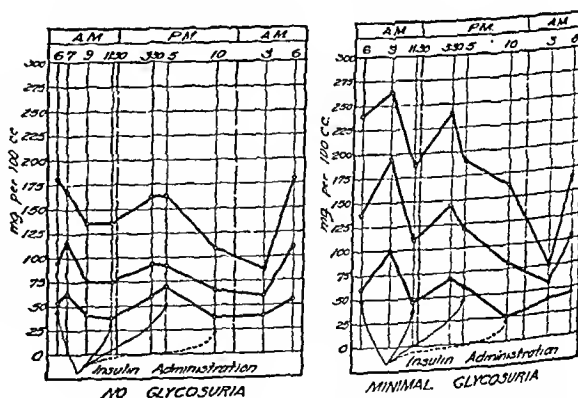


Chart 4.—Diurnal blood sugar fluctuations of children with moderately severe diabetes receiving from 30 to 60 units of insulin a day in four divided doses. Six aglycosuric subjects, with a total of nineteen days' observation, provided the data shown at the left; four patients with minimal aglycosuria (an excretion of not more than 5 Gm. in the twenty-four hours), with a total of ten days' observation, were used in the study illustrated at the right. The significance of each curve is as described under chart 3.

finally reaches a stage of compromise between that which is prescribed and that which his home environment makes possible. With the more favored patients, the compromise is a small one. With the noncooperative, economically handicapped or indifferent family,

evidence often indicates that the regimen is being met in minimal degree. Even so, we feel it advantageous to prescribe nothing less than the best for the patient's ultimate interests; if compromise is to be made, let it be made by the patient and his parents, not by the physician. Although the patient may do less than we direct in the way of therapy, he is not likely to do more.

The regimen for treatment of the patient with diabetes should be directed toward the conservation of his resources in their entirety. This implies the maintenance of aglycosuria as far as possible. A regimen which requires or condones glycosuria, even of mild degree, cannot be considered favorable for the patient's ultimate welfare.

#### ABSTRACT OF DISCUSSION

DR. PERCIVAL ALLEN GRAY JR., Santa Barbara, Calif.: The aim in the management of the diabetic child is to provide a diet adequate for growth and development and to maintain a blood sugar level within physiologic limits. Before the advent of modified insulin four hypodermic injections a day were usually required to realize this aim. Without a fourth, or nocturnal, dose of insulin the child could not consistently maintain a normal fasting blood sugar level. The use of modified insulin has obviated the necessity for so many doses. The policy at the Santa Barbara Clinic has been to administer before breakfast the least amount of protamine zinc insulin necessary to control hyperglycemia during the ensuing night. When this amount has not also sufficed to control hyperglycemia during the day, supplementary doses of unmodified insulin have been given. Few of the children have been able to stay controlled with one dose of protamine zinc insulin a day. The majority have required at least one supplementary dose of unmodified insulin, which has usually been given at the same time in the morning. This program has reduced the danger of unrecognized hypoglycemic shock to a minimum. The necessity of giving a quick-acting insulin with the more slow-acting preparation is occasioned by the delayed absorption of the latter. Since histon insulin contains a greater proportion of free insulin per unit volume than does protamine zinc insulin, it does not have to be supplemented with unmodified insulin as often. Each preparation is capable of controlling juvenile diabetes when used alone. However, in many instances the amount required may be so great as to subject the patient to a grave risk from hypoglycemic shock. This risk is increased by the unpredictability of the absorption of modified insulins. One is often forced to weigh the risk of chronic hypoglycemia against that of chronic glycosuria. Many patients are not suited to treatment with modified insulin and must return to multiple doses of unmodified insulin. Some patients do well only if their modified insulin is supplemented by multiple doses of unmodified insulin. One wonders what advantage accrues if the child requires three or four injections anyway. I agree with the authors that protamine zinc insulin has been something of a disappointment in the treatment of juvenile diabetes cases. Not only has it frequently failed to prevent the characteristic wide fluctuations in the blood sugar level, but it has produced some troublesome local cutaneous reactions. Some children who at first did poorly with protamine zinc insulin did well later when their diet was changed. At present my associates and I consider from 200 to 225 Gm. of carbohydrate the upper desirable limit for patients receiving modified insulin. This carbohydrate allowance is given one fifth for breakfast and two fifths for each of the other two meals. Bedtime nourishment has been insisted on to protect against hypoglycemia during the night. I feel strongly about negligent treatment of diabetic children, but much of my early fear about the deleterious effects of mild, even though persistent, glycosuria has faded. Children seem to grow at a normal rate, pass successfully through accidents and illnesses, avoid the classic complications of diabetes and lead happy and useful lives in spite of never being exactly sugar free.

DR. LEONA M. BAYER, San Francisco: This paper seems important in relation to certain problems which I have found

in the care of diabetic children at Stanford University Hospitals. With so much medical publicity in newspapers, a curious situation seems to be springing up, in which the burden of proof is on the physician who does not immediately subscribe to all the newest methods. Thus the physician who says that protamine zinc insulin is often not appropriate or that strict control is valuable, in spite of much discussion of free regimens, is sometimes put on the defensive. For this reason such a critical evaluation of the effect of protamine zinc insulin based on a preliminary demonstration of the changes in the level of control under careful supervision with regular insulin seem to me most valuable. Before the long time value of strict versus less rigid control can be definitely proved, longitudinal studies on diabetic children are needed for comparison with the normal growth studies which are now coming out of child study institutes.

DR. J. D. BOYD, Iowa City: With the use of regular insulin and a strict regimen of management, an excellent level of diabetic control can be maintained, with essential freedom from glycosuria, even with the severely diabetic child. Protamine zinc insulin can do no more than this, and in our hands it has been less effective. However, we are concerned less with the problems of protamine zinc insulin than with urging adherence to higher standards of treatment for the child with diabetes mellitus.

#### GASTRODUODENOSTOMY FOR CERTAIN DUODENAL ULCERS

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AND

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Although the operation of gastroduodenostomy was suggested in 1892 by Jaboulay<sup>1</sup> and first applied in 1898 by Henle,<sup>2</sup> it has received no widespread application and in fact is unknown to many surgeons. This is a curious circumstance to us, for although gastroduodenostomy is by no means a panacea for all duodenal ulcers, there are certain situations in which it can be readily applied with most satisfactory results. It is not our intention at this time to enter the controversy which still continues regarding the relative advantages

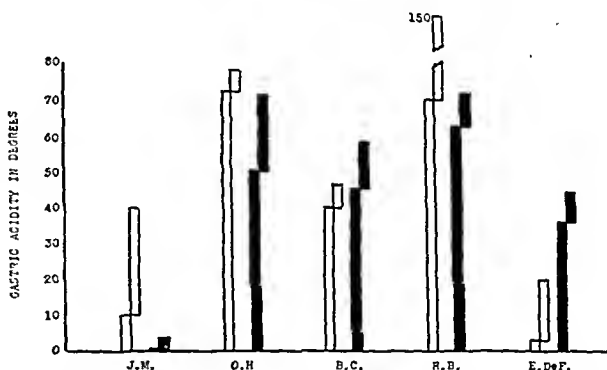


Fig. 1.—Degrees of free and combined gastric acidity for five patients before (hollow blocks) and after (solid blocks) lateral gastroduodenostomy.

of short-circuiting operations and some type of gastric resection for duodenal ulcer. It is generally recognized that duodenal ulcers which finally require surgical intervention because of the failure of medical treat-

Read before the Section on Surgery, General and Abdominal, at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 16, 1938.

1. Jaboulay, Mathieu: De la gastro-duodenostomie, Arch. prov. de chir. 1: 551, 1892.

2. Henle, A.: Ein Fall von Gastroduodenostomie, Centralbl. f. Chir. 25: 753, 1898.

ment or because of the occurrence of complications during their course cannot all be managed by any one surgical procedure. The surgeon must be prepared in each case to apply the operation best adapted to the conditions encountered. Some patients should certainly have a subtotal resection of the stomach, and for others it is recognized that some type of short-circuiting operation is best. Gastroduodenostomy is one of the short-circuiting procedures which has an occasional place in the surgical treatment of duodenal ulcer.

Since the successful beginning of gastrointestinal surgery in 1881, with Woelfler's gastrojejunostomy and the Billroth I gastric resection, many operations for the treatment of duodenal ulcer have been devised. Surgeons at first concerned themselves chiefly with gastrojejunostomy and various combinations of this operation with gastric resection. Later they focused their attention on operations involving only the stomach and duodenum, including the pyloroplasties described by Heineke in 1886, Finney<sup>3</sup> in 1902 and Horsley<sup>4</sup> in 1919.

Jaboulay<sup>1</sup> in 1892 first suggested anastomosis of the stomach and the second part of the duodenum. He pulled the anterior surface of the stomach down and over to the right, so that the anastomosis was difficult

of the greater curvature of the stomach. Theodor Kocher<sup>6</sup> in 1903, however, was the first to mention specifically the feature of modern gastroduodenostomy which makes its performance so easy and so satisfactory: complete mobilization of the second part of the duodenum simply by incision of the parietal perito-



Fig. 3.—The wrong way to turn the duodenum over to the stomach. When the lateral side of the duodenum is grasped rotation occurs, with resulting obstruction.



Fig. 2.—Mobilization of the second part of the duodenum by cutting the parietal peritoneum at its posterior border is the first essential in gastroduodenostomy.

of performance and resulted in tension on the suture line. Villard<sup>5</sup> in 1900 reported an easier modification, much more like the one we use today, in which the duodenum was made to anastomose with the right end

neum lateral to it. It is of interest that Kocher, master surgeon, wrote of gastroduodenostomy: "We regard it as the normal procedure, and we are of the opinion that it will take precedence over all the previous methods of gastro-enterostomy and pyloroplasty." The operation of Villard as modified by Kocher and the procedures described by Balfour<sup>7</sup> in 1918 and by Moynihan<sup>8</sup> in 1921 differ in only minor particulars from the technic we follow today.

Rienhoff<sup>9</sup> in 1932 described an "intrapapillary gastroduodenostomy," in which the gastric contents are emptied into the duodenum well below the papilla of Vater. It is not apparent to us that sufficient advantage comes from entering the duodenum in its third part rather than its second to warrant the added dissection necessary to mobilize it.

Much work has been done on the subject of gastric acidity and its changes after various stomach operations, particularly those designed for relief or cure of duodenal ulcer.

Snell<sup>10</sup> has recently emphasized, and Steinberg, Brounger and Vidgoff,<sup>11</sup> Hill, Henrich and Wilhelmj,<sup>12</sup>

3. Finney, J. M. T.: A New Method of Pyloroplasty, *Bull. Johns Hopkins Hosp.* 13:155 (July) 1902.  
4. Horsley, J. Shelton: A New Operation for Duodenal and Gastric Ulcer, *J. A. M. A.* 73:575 (Aug. 23) 1919.  
5. Villard, Eugene: La gastroduodenostomie sous-pylorique, *Rev. de chir.* 22:494, 1900.

6. Kocher, Theodor: Mobilisierung des Duodenum und Gastroduodenostomie, *Zentralbl. f. Chir.* 30:33, 1903.  
7. Balfour, Donald C.: Gastroduodenostomy, *Indications and Technic.* *Ann. Surg.* 67:80 (Jan.) 1918.  
8. Moynihan, Sir Berkeley: *Abdominal Operations*, ed. 4, Philadelphia, W. B. Saunders Company, 1921.  
9. Rienhoff, W. F.: Intrapapillary Gastroduodenostomy by Mobilization with Retromesenteric Displacement of the Duodenum and Jejunum, *Ann. Surg.* 95:183 (Feb.) 1932.  
10. Snell, Albert M.: Behavior of Stomach After Operation for Duodenal Ulcer, *Am. J. Surg.* 35:45 (Jan.) 1937.  
11. Steinberg, M. E.; Brounger, J. C., and Vidgoff, I. J.: Changes in the Chemistry of the Contents of the Stomach Following Gastric Operations, *Arch. Surg.* 15:749 (Nov.) 1927.  
12. Hill, F. C.; Henrich, L. C., and Wilhelmj, C. M.: Changes in Gastric Acidity After Various Operations, *Arch. Surg.* 31:622 (Oct.) 1935.



Walters,<sup>13</sup> J. M. T. Finney Jr.<sup>14</sup> and others agree, that the reduction in acidity often obtained after pyloroplasty, gastroduodenostomy or gastrojejunostomy and even that following subtotal gastric resection is due chiefly to regurgitation of the duodenal contents. Furthermore, as Wilhelmj, Henrich and Hill<sup>15</sup> have pointed out, the efficiency of duodenal secretions in lowering the acidity in the stomach is perhaps due 75 per cent to simple dilution and only 25 per cent to neutralization. Hill and his associates, using dogs, showed that the increase in duodenal regurgitation was maximal after gastroduodenostomy, more than after either gastrojejunostomy or pyloroplasty.

From the physiologic point of view it would appear logical to empty the acid gastric secretion into the duodenum rather than into the jejunum. It is now common clinical knowledge that the farther away from the pylorus the gastric juice enters the intestine, the greater the chance for suture line ulceration. This has recently been again confirmed in the laboratory by de Bakey.<sup>16</sup> He showed by a series of experiments that, with gastrointestinal anastomosis, ulceration occurred in a steadily rising percentage of cases when increasing quantities of the bile, pancreatic juice and succus entericus were removed from the area of the suture. He found suture line ulcer in 100 per cent of those animals in which no bile, succus entericus or pancreatic juice reached the suture line. In view of these and similar experiments it would seem that gastroduodenostomy should seldom be followed by anastomotic ulcer

lowered by gastroduodenostomy, however, is by no means clear from our results.

The accompanying chart of gastric acidity for five of our patients who had gastroduodenostomy shows no evidence of adequate dilution or neutralization of gastric acidity. As may be seen, the total and free acid from months to years after operation was nearly as high as or



Fig. 5.—The duodenum brought up toward the greater curvature of the stomach, which is now readily laid against it.



Fig. 4.—The proper way to lift the second part of the duodenum bodily over toward the stomach. When adequate mobilization has been secured this can be done with no tension whatever on the duodenum.

and should be a valuable means for neutralizing high gastric acidity by permitting alkaline duodenal contents readily to enter the stomach. That gastric acidity is

was higher than it had been before operation. This we find very surprising, since all the patients are clinically apparently well and recent x-ray studies show no evidence of any pathologic change.

Theoretically, anastomotic or suture line ulcer either should not occur or should be very infrequent after gastroduodenostomy, but in actual practice it occasionally does occur. We doubt that it is frequent, but it is difficult to obtain any statistics. Moynihan never saw secondary ulceration. J. M. T. Finney Jr. said that anastomotic ulcer does not follow gastroduodenostomy. Flint,<sup>17</sup> in a study of 200 operations, did not see this complication. We have had no evidence of suture line ulcer in our fifteen cases.

That suture line ulcer may follow gastroduodenostomy, however, is attested by Wilkie's<sup>18</sup> report in 1933 of two cases in a series of 159 gastroduodenostomies. He said, however, that in both cases the ulcer responded immediately to later gastrojejunostomy. More recently Graham<sup>19</sup> reported one stomal ulcer in his experience with nine gastroduodenostomies. We have therefore positive evidence from the literature of only three stomal ulcers after nearly 400 operations, an incidence of less than 1 per cent. Allowing for inaccuracies, this is still a considerably lower incidence of stomal ulcer than the 8.5 per cent reported in England by a careful collective inquiry into gastrojejunal ulcer after posterior gastro-enterostomy.<sup>20</sup>

13. Walters, Waltman: Gastric Acidity Following Operations for Gastric and Duodenal Ulcer, *Ann. Surg.* 104: 585 (Oct.) 1936.

14. Finney, J. M. T., Jr.: Pyloroplasty and Gastroduodenostomy, *Surgery* 2: 738 (Nov.) 1937.

15. Wilhelmj, C. M.; Henrich, L. C., and Hill, F. C.: The Influence of Duodenal Secretions on Acid Gastric Contents, *Am. J. Physiol.* 111: 293 (March) 1935.

16. de Bakey, M. E.: Peptic Ulceration, *Arch. Surg.* 34: 230 (Feb.) 1937.

17. Flint, E. R.: Further Experiences with Gastroduodenostomy, *Lancet* 1: 12 (Jan. 1) 1927.

18. Wilkie, D. P. D.: Indications for Surgical Therapy in Peptic Ulcer, *Brit. M. J.* 1: 771 (May 6) 1933.

19. Graham, Roscoe R.: Technical Surgical Procedures for Gastric and Duodenal Ulcer, *Surg., Gynec. & Obst.* 66: 269 (Feb. 15) 1938.

20. Wright, Garnett: A Collective Inquiry by the Fellows of the Association of Surgeons into Gastrojejunal Ulcer, *Brit. J. Surg.* 22: 433 (Jan.) 1935.

Gastroduodenostomy has thus far been most satisfactory in our experience in the relief of pyloric stenosis. We have used it in seven cases of this condition in the last three and a half years, with results that have been most satisfactory. Four of the seven patients were in a serious condition when admitted to



Fig. 6.—The posterior layer of silk sutures has been inserted; the stomach and the duodenum have been opened, and the inside layer of sutures is started.

our service. They were all over 50, one being 67. The four all showed clinical and chemical evidences of their long-standing obstructions. One patient, a woman, was confused, disoriented and semicomatose, with a high nonprotein nitrogen content, a high value for carbon dioxide and a low content of blood chlorides. We spent ten days preparing her for operation, and in addition to a gastroduodenostomy we did a jejunostomy, by means of which immediate postoperative feeding was given. We have repeatedly used jejunostomy for feeding in cases of serious involvement of the stomach and are convinced that it is a valuable adjunct in their management.

The postoperative course of these patients with obstruction was surprisingly comfortable. Almost no vomiting occurred, and gastric drainage by Levine tubes was usually unnecessary after a few hours. Their course seemed to us much smoother than that of patients with a similar involvement who had had a posterior gastro-enterostomy.

All these patients are still feeling well after intervals of six months to three years. Roentgenograms show the new stoma working well, with varying amounts of barium sulfate going through the pylorus. Four had their gastric acidity checked a year or more after operation. To our surprise it was higher than normal in three cases and normal in the fourth. This fact causes us some concern as to future possibilities in spite of the present comfortable clinical status of the patients.

We have used gastroduodenostomy for two patients, both men, who had persistent pain from duodenal ulcer in spite of long medical treatment. They have been

relieved of their symptoms and apparently are doing well one and two years, respectively, after operation, although one showed a high value for total acid when examined a year after operation. This man's fluoroscopic examination showed most of the barium sulfate going through the new opening and a two to three hour emptying of the stomach. Because of the high gastric acidity persisting after operation in this case and in others we have observed, we are hesitant to use this operation for the nonobstructed duodenal ulcer for which medical management fails, in spite of the present comfort of both these men. We would, we believe, feel much more optimistic as to their future if we had done a subtotal gastrectomy.

We have done gastroduodenostomy for two male patients with duodenal ulcer who had had serious hemorrhages. One of these has remained entirely comfortable and very well for over two years. The other patient died a few hours after operation.

There is an increasing tendency among surgeons to operate when there is massive hemorrhage from duodenal ulcers if the patient's condition warrants and to resect the stomach and the ulcer if possible. We are in agreement with this policy when it can be followed, but certainly we believe that in many hands radical resection of the stomach just after acute bleeding will carry a serious mortality. Furthermore, it is well known that in occasional instances a short-circuiting operation has been beneficial. Gastroduodenostomy may permit one to view the bleeding ulcer when the duodenum is opened and may permit suture of its base. This procedure is certainly not ideal for the complication, but we believe that for certain bleeding ulcers

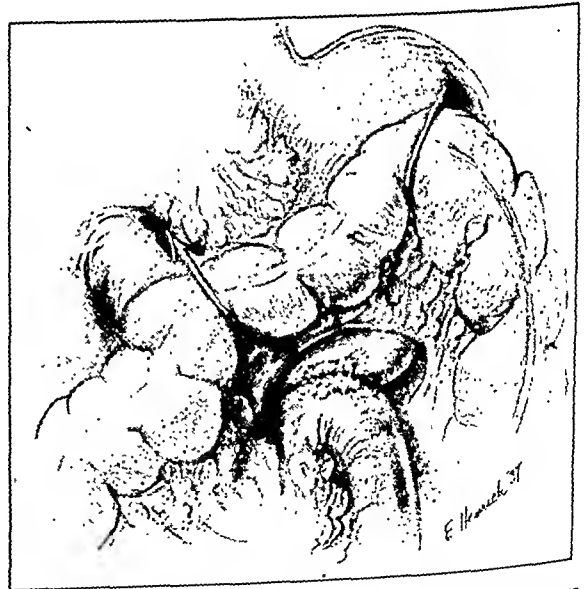


Fig. 7.—From a recent case of gastrojejunal and duodenal ulcer in which repeated serious hemorrhages occurred. In such cases the gastrojejunostomy must be taken down, the jejunum closed and either a subtotal gastrectomy performed or some other procedure like gastrojejunostomy done to overcome pyloric spasm and obstruction.

the patient's condition, the ulcer's location and the surgeon's abilities combine to make it a most useful operation.

In two cases we have combined gastroduodenostomy with the resection of an ulcer very high on the lesser curvature of the stomach. The first operation was

done over two and one-half years ago; the patient was a man of 58 and has been repeatedly examined by x-rays and gastroscopy. For a year after operation he was well in every way and his ulcer had healed. He then had a return of the ulcer in the lesser curvature, where it was previously excised. There has been much question as to whether or not it is malignant, but since it has not changed in some months it is apparently benign. The other patient was a girl of 18 with a perforating ulcer very high on the lesser curvature, which we felt was too indurated to permit subtotal gastrectomy. Her operation was recent and she is still doing well.

From these experiences we feel that we cannot recommend, as first choice, gastroduodenostomy and local resection of ulcers high on the lesser curvature. We believe they should have subtotal resection of the stomach if feasible. If resection is not safe, however, as in our second case, we believe that local resection by knife or cautery, plus some short-circuiting procedure, is the only choice.

Gastroduodenostomy has been particularly helpful to us in the successful management of two bleeding gastrojejunal ulcers. Our experience with such ulcers has frequently been distressing because of the extensive surgical procedures necessary to cure them. Ideally certain fundamental steps are desirable and necessary. One must (1) remove the jejunum from the stomach, (2) remove any ulcer from the jejunal wall and close the jejunum and (3) overcome pyloric obstruction and high gastric acidity either by resection of the stomach or by some short-circuiting procedure.

The addition of a subtotal gastric resection and a Polya or other anastomosis to the removal and repair of the jejunum is at times, in our opinion, too much surgical intervention. We have in the past, in one case, taken down the gastro-enterostomy and left the duodenum alone. The patient, a man, later had severe pyloric obstruction, had a gastric resection elsewhere and died. It is apparent to us, therefore, that after the reduction of a gastro-enterostomy relief of pyloric spasm and obstruction must be assured by either a plastic operation on the pylorus or a subtotal gastric resection. We prefer, and carry out, resections of the stomach when feasible. In the two cases recorded here, however, repeated severe bleeding had so depleted the patients' strength that they were poor operative risks and we feared that subtotal gastrectomy would prove too radical a procedure. Gastroduodenostomy was followed by complete relief for three years in one case and by very satisfactory relief for two years in the other. The second patient still has a high gastric acidity and recently had some heartburn, which was relieved by a few alkaline powders.

#### TECHNIC

The proper development of gastroduodenostomy technically is entirely dependent on an adequate mobilization of the second and at times even the third part of the duodenum. Unless one has seen or tried mobilization of the second part of the duodenum one has no conception of the ease with which it can be done or of the degree to which the duodenum can be brought up from its bed around the head of the pancreas.

We prefer a retracting incision of good length in the upper part of the right rectus muscle. This permits either gastroduodenostomy or, if need be, any other

operation on the stomach. The stomach and colon are retracted and walled out of the field by gauze pads. Other gauze pads are placed over the inferior surface of the liver, which is now retracted. The peritoneum, just lateral to the duodenum, is incised (fig. 2), and since this layer is almost bloodless it can rapidly be freed from the cellular tissue beneath it. The duodenum should be freed well up around the first part and down as far as is necessary to permit it to lie readily against the stomach, the surgeon using care not to be too rough and so cause bleeding in the adjacent pancreatic tissue.

When the duodenum has been adequately freed it is possible to lay it with no tension whatever and with no rotation or twisting of its lumen against the greater curvature of the stomach in the prepyloric area.



Fig. 8.—The defect in the stomach left after detaching the jejunum has been closed. The jejunum is to be closed next by suturing it transversely.

Figure 3 shows the wrong way to lift up the duodenum. The clamp has been applied to the outer border of the second part of the duodenum, and as this pulls it upward it inevitably must roll the duodenum and so narrow its lumen. Figure 4 shows the correct way to lay the duodenum against the greater curvature of the stomach by placing Allis clamps along its superior border. When the duodenum has been sufficiently mobilized, no obstruction to its lumen results from the procedure.

It is our belief that certain reports in the literature of the occurrence of serious difficulties immediately after gastroduodenostomy, such as persistent vomiting and obstruction, are perhaps related to the fact that the duodenum was rotated when it was laid against the stomach instead of being lifted bodily over to the greater curvature of the stomach.

Figure 5 shows a stay suture placed at the superior end of the duodenum, near the pylorus, and holding forceps bringing the greater curvature of the stomach

and the mesial border of the duodenum together for the placing of the stay suture at the lower end of the anastomosis. Figure 6 shows the posterior layer of sutures, which we always place with fine silk, already finished. The stomach wall has been opened, any bleeding vessels have been caught and tied, the duodenal wall has been opened, and the second layer of sutures, which we make with fine chromic catgut, is just being started.

We do not use clamps for gastroduodenostomy. In the first place it is difficult or impossible to place them,

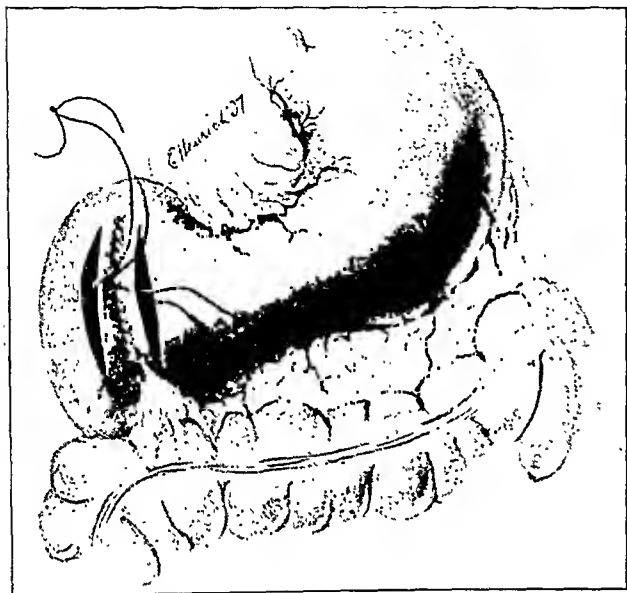


Fig. 9.—The gastroduodenostomy passageway being made after the jejunum has been removed from the stomach and the defect in the greater curvature of the stomach closed. Subtotal gastrectomy added to these preliminary procedures may be too much surgical intervention for the patient. Gastroduodenostomy can be quickly and easily done with much less shock and will overcome pyloric spasm and obstruction.

and in the second place we like to see any bleeding vessels so that we can catch them individually and tie them.

We use the greatest care in walling off the entire abdomen, especially the subphrenic and subhepatic areas, before opening the stomach or duodenum. By the constant use of suction we prevent to a great degree any soiling of the area.

The gastroduodenostomy suturing is now finished, just as in any gastrointestinal anastomosis, and, when the outer layer of silk sutures is completely in place, bits of omentum are brought in and tied over the suture line to make further protection.

Figures 7, 8 and 9 show the use of gastroduodenostomy in the complicated surgical technic necessary for the cure of gastrojejunal ulcers. The jejunum is first separated from the stomach, as shown in figure 8, and the defect in the greater curvature of the stomach is closed by a double layer of sutures. The defect in the jejunum is now closed by suturing the longitudinal hole transversely after the Heinecke-Mikulicz method. In figure 9, one can see the outline of the defect made in the greater curvature of the stomach by closing the opening which was previously anastomosed to the jejunum. One sees also, in this schematic drawing, the first row of sutures placed in the gastroduodenostomy, and one notes the location of the open-

ings in the greater curvature of the stomach and the second part of the duodenum, which are to be joined.

In conclusion, then, we would urge that gastroduodenostomy be given more consideration when surgical treatment is necessary in the management of certain duodenal ulcers. Although opinions and experiences as to the occurrence of stomal ulcers after gastroduodenostomy differ widely, we have been unable to discover evidence of a high percentage of these post-operative complications. We believe that gastroduodenostomy results in a nearer approach to normal gastric physiology than other short-circuiting operations. Our clinical experiences with this operation have been very satisfactory.

171 Bay State Road.

#### ABSTRACT OF DISCUSSION

DR. ROBERT S. DINSMORE, Cleveland: The authors have called attention to an operative procedure which is not in common use. Obviously this procedure has the advantage that any pyloroplasty does, in that it cannot be followed by a jejunal ulcer and that in most hands it would have a lower mortality rate than gastric resection. Theoretically it should offer the advantage of emptying the gastric secretion into the duodenum rather than the jejunum. Moynihan has cited three types of cases which prevent this operation from having a wide application: first, cases in which there is a large active ulcer of the duodenum accompanied by infection and edema in the surrounding areas; second, cases in which the duodenum is immobile because of chronic adhesions either from a previous ulcer or from disease of the gallbladder, and, third, cases in which there is an obstruction by the third portion of the duodenum as the result of pressure from the superior mesenteric artery or the right or middle colic artery and tuberculous glands. In the United States the incidence of tuberculous glands is low, and from a practical standpoint the third type of case is not as important as the first two. Moynihan also made the point that the convalescence of the patient is not as smooth as after an ordinary gastro-enterostomy. This has not been the experience of Dr. Clute and Dr. Sprague. Cases of the types cited, with the small number of cases of duodenal ulcer which are referred to the surgeon by the gastro-enterologist, leave a limited number to which the operation may be adapted. At the Cleveland Clinic during the past year only 5 per cent of the patients with duodenal ulcer came to the surgeon. I am in accord with the authors when they state that the operative procedure for the cure of a gastrojejunal ulcer may be a formidable task. Immobilization of the ulcer itself in some instances is difficult. In addition there must follow resection of the ulcer, resection of the stomach, closure of the duodenal stump and anastomosis of the jejunum to the stomach. Occasionally the anastomosis has to be made at a site which is not adaptable to the opening in the jejunum, which follows the resection of the ulcer. If possible it would be a great advantage to do the simple procedure which the authors used in their two cases. A striking fact is that in the 400 collected cases there were only three stomal ulcers. This perhaps supplied the greatest argument for the use of this procedure.

DR. HAROLD LINCOLN THOMPSON, Los Angeles: Dr. Clute and Dr. Sprague have made a definite contribution to American experience with gastroduodenostomy. They stated that the operation should be limited to selected cases. All their cases were complicated, and despite the fact that they did not observe a lowering of acidity and their suggestion that subtotal resection might have been preferable in some instances, the clinical results were good. Since Jaboulay first suggested gastroduodenostomy forty-six years ago the operation has not come into general use because of certain technical difficulties and the widespread use of gastrojejunostomy. Gastrojejunal ulcer has brought the latter operation into current and growing disfavor. For this reason the attention of American surgeons has been directed toward plastic or other short-circuiting operations. In continental

Europe subtotal gastric resection is widely used in the treatment of duodenal ulcer. In spite of certain objections this procedure has a firm physiologic basis. The surgeons who have had the greatest experience with gastroduodenostomy are Flint of Leeds and Wilkie of Edinburgh. Flint has used the operation almost exclusively in 200 cases, whereas Wilkie has used it in approximately 160 cases. The critical remarks of Wilkie are noteworthy because he also uses other forms of operation in the treatment of peptic ulcer. He employs the operation for recurrent irritable ulcers with hypersecretion in patients whom he considers unsuitable for gastrojejunostomy. His results do not equal those of gastrojejunostomy. The results were excellent with 64 per cent of his patients, and an additional 25 per cent were relieved but not cured. Stomal ulcer was present in two instances. There is a difference of opinion regarding the effect of gastroduodenostomy on the secretory and motor functions of the stomach. I have conducted extensive studies on the effects of various surgical procedures on these functions. In 1932 I reported the effects of graduated resection of increasing portions of the pylorus in dogs. I observed a reduction in acid values directly proportional to the amount of pylorus removed. At the same time I made observations on gastroduodenostomy. In the gastric contents, after a meat-water test meal or the injection of histamine, the hydrogen ion concentration was not reduced. However, according to fractional analysis the volume of gastric contents is increased and the emptying time of the stomach is prolonged. The amount of bile in the gastric contents also is increased. I have employed gastroduodenostomy in the treatment of twelve patients with complicated peptic ulcer. Despite careful selection of cases, there was one death. Otherwise the clinical results were good.

DR. M. E. STEINBERG, Portland, Ore.: The authors' remarks on the physiology and the anatomic relationships of gastroduodenostomy are in agreement with clinical experience and some experimental evidence. It remains for me to emphasize that an extensive mobilization of the duodenum entails certain dangers. The stomach, filled with bile, pancreatic juice and blood, pulling the duodenum to the left side, may kink it on the mesocolon or the root of the mesentery. Some fatalities due to a high duodenal obstruction have been reported after a Finney-Haberer gastric resection. There is some troublesome retention and vomiting after the Finney-Haberer modification of the Billroth I stomach resection. The mobilization of the duodenum, which is pulled to the left side by the stomach, may also pull or twist the common duct and produce pancreatitis. I have performed eleven gastric resections of the Finney-Haberer type in suitable cases with excellent results. This operation is contraindicated for fat patients because the blood supply on the outside of the duodenum is extensive and the mobilization more difficult. A gastroduodenostomy or a Finney-Haberer resection will not prove successful in the presence of stasis in the duodenum. I have performed 131 stomach resections, with three fatalities. Two of the fatalities were in connection with a secondary operation for jejunal ulcer and only one in connection with a primary resection. I believe that a gastroduodenostomy should give good results in a certain percentage of cases. In view of my experience I must remain satisfied with the resection in preference to any indirect procedure, hoping that the results in the future will be as favorable as they have been in the past.

DR. HOWARD M. CLUTE, Boston: The postoperative obstruction following gastroduodenostomy, to which Dr. Steinberg refers, has been reported frequently in the literature and has been in the past a common and serious complication of the operation. I believe this difficulty is due to rotation of the duodenum as it is laid against the stomach. This we have studiously avoided in our cases, as shown in the artist's drawing. In our experience vomiting after gastroduodenostomy has not been a problem. I do not wish to leave with you the impression that I consider gastroduodenostomy a panacea for all duodenal ulcers and believe that it will replace all other methods of treatment. I do, however, wish to emphasize three situations in which this operation has been helpful to us. 1. Gastroduodenostomy with local anesthesia has been technically easier

for me than posterior gastro-enterostomy in treating certain very sick patients with long-standing and severe pyloric obstruction. 2. In certain cases of serious hemorrhage from a duodenal ulcer gastroduodenostomy may be life saving. It may permit vision and suture of the bleeding ulcer as well as relief of the pyloric obstruction. 3. In occasional cases of bleeding gastrojejunal ulcer, gastroduodenostomy can safely replace gastric resection after the gastrojejunal ulcer has been removed. By this lesser procedure the operative shock is lessened and yet the pyloric obstruction and spasm related to the original duodenal ulcer are relieved.

## Clinical Notes, Suggestions and New Instruments

### DIPHTHERITIC INVOLVEMENT OF THE LIPS, WITH ABSENCE OF SIGNS IN THE NOSE AND THROAT

H. JERRY LAVENDER, M.D., AND JOHN B. SQUIRES, M.D.  
CINCINNATI

No mention can be found in the literature of cases in which diphtheria involved the lips and buccal membranes alone, with repeated negative clinical signs in the nose and throat. Believing this to be the first report of such an involvement, we present the following report:

J. M. W., a colored girl aged 10 years, was admitted to the children's burn ward at the Cincinnati General Hospital Oct. 16, 1937, with an extensive (60 per cent total body area) second and third degree burn from fire. The face and neck were spared. She was in deep shock. Intravenous dextrose and a blood



Fig. 1.—Diphtheria of lip, showing ulcerous area seventy-two hours after onset.

transfusion were given immediately, along with other anti-shock therapy. In view of the extent of the burn, she did well; daily transfusions were given and the burned areas were treated locally with wet dressings of solution of aluminum acetate and green soap tub baths as soon as the patient could tolerate them. Cultures of material from the nose and throat on the second day were negative for Klebs-Loeffler bacilli.

At midnight October 27 (the twelfth hospital day) swelling of the lower lip was noted. Eight hours later two thirds of

From the Department of Dermatology and Syphilology, Pediatric Division, Cincinnati General Hospital.



the lower lip was involved in a granular lesion covered with a tough whitish membrane. On the right buccal mucous membrane were similar small round patches. A stained smear (carbol gentian violet) showed many short chained cocci but no fusiform bacilli.

On culture of material from the area, hemolytic streptococci and staphylococci were found. Culture of material from the nose and throat were again negative for Klebs-Loeffler bacilli. Within twelve hours an area in the center of the lower lip 1 cm. in width and 1 cm. in depth began to slough, and sloughing was complete within twenty-four hours. The surface of the ulcer was now smooth and a deep red and involved the entire lower lip. Sulfanilamide was given in 5 grain (0.3 Gm.) doses four times a day. Ten cc. of polyvalent antistreptococcus serum was given intravenously along with 5 minims (0.3 cc.) of epinephrine, 10 cc. of calcium gluconate and 200 cc. of physiologic solution of sodium chloride. The next day another culture of material from the area of the lip was morphologically positive for Klebs-Loeffler bacilli; that from the nose and

also showed Klebs-Loeffler bacilli. The lip was healing nicely but ulceration of the gums was more marked. At no time was there any membrane or any clinical evidence of diphtheria in the nose or throat. Diphtheria antitoxin was again given. On the fortieth hospital day the use of a 2 per cent aqueous solution of gentian violet on the gums was begun. Cultures continued to be positive for Klebs-Loeffler bacilli. Within another week, however, the lip and gums were entirely healed and cultures became negative and remained so. Progress was noted in the healing of the burned areas.

The salient points in this case were:

1. Diphtheritic involvement of the lips with ulcerations.
2. Diphtheritic involvement of the buccal membranes.
3. Diphtheritic involvement of the gingival area.
4. Positive virulence test with Klebs-Loeffler bacilli from the lips and buccal membranes.
5. The finding of Klebs-Loeffler bacilli from tooth sockets (alveoli).
6. Consistently negative clinical signs in the nose and throat.
7. Consistently negative cultures for Klebs-Loeffler bacilli in the burned areas.
8. Healing of ulcerous area, and recovery.

717 Provident Bank Building.

#### AN UNEXPECTED ELECTROCARDIOGRAM OF THE FETUS

ALLEN S. JOHNSON, M.D., SPRINGFIELD, MASS.

Electrocardiograms of the human fetus in utero are apparently comparatively rare; a search through the *Quarterly Cumulative Index Medicus* for the past five years discloses no references in the literature except for the work of Strassmann and his associates<sup>1</sup> in Germany in 1933, which was summarized by Strassmann<sup>2</sup> in this country in 1936. Sachs<sup>3</sup> had reported such studies in 1922, as did some Japanese workers<sup>4</sup> seven years later.

There are two possible explanations for the rarity of such observations in the face of the immense amount of electrocardiographic material now available. The galvanometric deflections of the electrocardiogram of the fetus are so faint that they defy detection unless the base line is smooth and entirely free of oscillations. And even with an ideal graphic background the human fetal heart and the corresponding cardiac current are too weak to appear in a routine electrocardiogram, as Strassmann<sup>2</sup> has pointed out. Nor did the use of a rectal or a vaginal electrode insure satisfactory results. After experimenting on pregnant domestic animals, Steffan and Strassmann<sup>1</sup> evolved a special apparatus and technic which enabled them to secure electrocardiograms of the human fetus late in pregnancy. The reasons for reporting the following case are twofold. Electrocardiograms of the fetus are still something of a medical curiosity; secondly, these tracings, in contrast to the foregoing, were obtained while a routine four lead electrocardiogram on the mother was being taken with an audion tube type of machine (Sanborn cardiette), which is in common clinical use throughout the country.

#### REPORT OF CASE

Mrs. B. M., a primipara aged 19, almost at term, was referred by Dr. A. F. G. Edgelow because of a pronounced cardiac irregularity of one month's duration. The patient herself was unaware of this arrhythmia and the pregnancy had otherwise been without incident. Clinical examination suggested

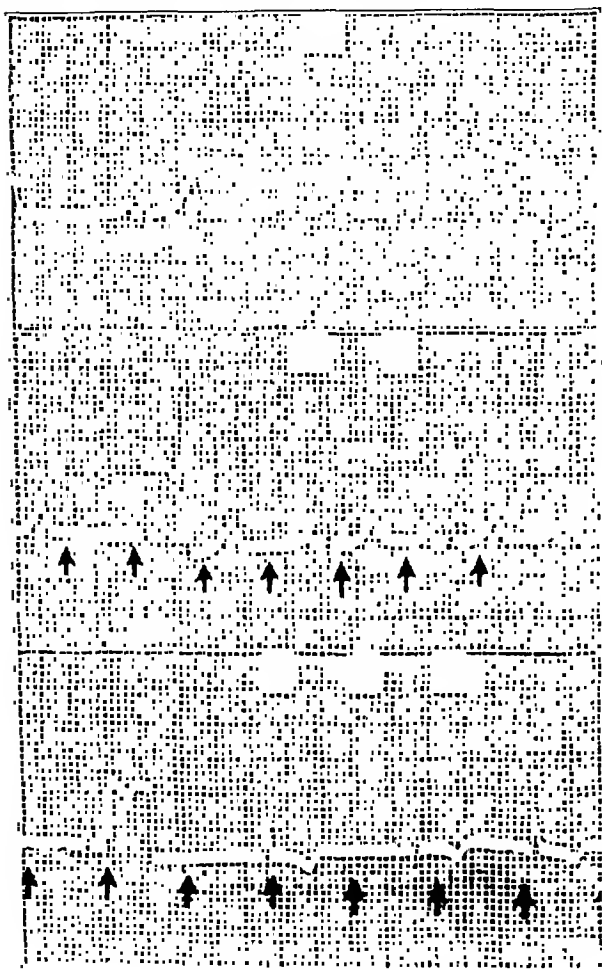


Fig. 2.—Healed upper and lower lips one month after onset.

throat was still negative. The temperature ranged from 99.4 to 101.8 F. Progression of the lesion ceased. On the fifteenth hospital day polyvalent antistreptococcus serum was given as before. Repeated cultures of material from the nose and throat were negative for Klebs-Loeffler bacilli, while cultures from that of the lesion of the lips were positive. On the twenty-first day a virulence test of the organism from the labial lesion was reported positive. At this time the lesion involved the right side of both upper and lower lips and extended onto the lower gums. No ulcerations were seen on the buccal mucous membrane. Careful vaginal examination revealed no ulcers or scars. The white blood cells numbered 34,050 with 60 per cent polymorphonuclear neutrophils and 34 per cent lymphocytes. Diphtheria antitoxin, 10,000 units, was administered intramuscularly. On the twenty-third day a culture of material from the throat was reported positive for Klebs-Loeffler bacilli for the first time and negative for hemolytic streptococci. Cultures from the burned areas were negative for both. The ulceration of the lip was healing somewhat but the process was extending along the lower alveolar ridge. The patient had a spiking type of temperature, but no evidence of pulmonary or renal infection was found. Repeated blood cultures and Kahn reactions were negative. On the thirtieth day two lower incisor teeth became so loose that the patient extracted them herself. Cultures from material in these sockets

1. Steffan, Helmut, and Strassmann, E. O.: Das fetale Elektrokardiogramm, *Zentralbl. f. Gynak.* 57: 610-615 (March 18) 1933.
2. Strassmann, E. O.: The Fetal Electrocardiogram, *Late in Pregnancy*, *Proc. Siam Meet.*, Mayo Clin. 2: 778 (Dec. 2) 1936.
3. Sachs, H.: Elektrokardiogramstudien am Foetus in Utero, *Archiv. f. Physiol.* 197: 536, 1922.
4. Maekawa, Magojira, and Toyoshima, Junijira: The Fetal Electrocardiogram of the Human Subject, *Acta Scholae med. univ. imp. Kioto* 12: 519, 1930.

a sinus arrhythmia, and an electrocardiogram was taken for confirmation. In the course of routine measurements, regularly recurring negative deflections about 0.5 mm. deep were encountered in leads 2, 3 and 4F (apex and left leg). These may be located by the arrows in the accompanying illustration. They were absent from leads 1 and 4R (apex and right arm) presumably because this electrical axis did not pass sufficiently close to the mother's pelvis to pick up the fetal currents. These fetal electrocardiographic deflections were at first thought to be artefacts, and a well known cardiologist was quite emphatic on this point, though it must be admitted that he was not told of the patient's pregnancy when the tracings were submitted. The true nature of these minute deflections became



The arrows point to the fetal deflections.

apparent when it was found that their frequency corresponded to the fetal heart rate. This opinion was subsequently confirmed by Drs. Paul D. White and Burton Hamilton of Boston.

In contrast to the tracings published by Strassmann,<sup>2</sup> the electrocardiogram in the present case showed slight changes in the fetal heart rate in lead 2. The patient was delivered of a normal full term child thirteen days later, but at the time of discharge from the hospital she still showed a marked sinus arrhythmia.

In the illustration unfortunately it is almost impossible to identify the fetal cardiac deflections even though they are located by means of arrows. Some of them may be detected by means of a 5 power lens and the rest must be taken on faith although they were quite obvious to the naked eye on the original tracings.

121 Chestnut Street.

## A CASE OF CHIARI'S NETWORK ASSOCIATED WITH A MURMUR RESEMBLING THE BRUIT DE ROGER

ROBERT WILSON, M.D., CHARLESTON, S. C.  
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This singular cardiac anomaly was first described in 1897 by Chiari,<sup>1</sup> who reported a series of eleven cases in which he found a peculiar network of fibers occupying the right auricle. This network he considered a developmental anomaly consisting of an incomplete residuum of the valvula venosa dextra and the septum spurium, which are represented only by threads attached to the eustachian and thebesian valves on the one side and to the crista terminalis or to the region of the tuberculum loweri on the other. The published reports would seem to indicate that the anomaly is very rare, although Yater<sup>2</sup> estimates that it occurs in from 2 to 3 per cent of hearts which are otherwise normal developmentally and Helwig<sup>3</sup> concludes that such reticula are "found to be present in 1.5 per cent of routine autopsy examinations." Probably it would be found more frequently if it were systematically looked for. Yater,<sup>2</sup> who has discussed the abnormality fully, collected from the literature twenty-five cases in addition to those reported by Chiari, four of which he himself had described, and reported still another case of his own. In no instance had the diagnosis been made prior to death, and in only one case had any physical signs been observed which might be attributed to the network. This case was reported by Alvarez and Herrmann<sup>4</sup> in 1931. These authors noted a "most peculiar low pitched thonging murmur heard along the right sternal border from the third rib region downward," which had a musical quality "and faded off into a distant purr." It resembled the venous soufflé which is heard at times over the jugular bulb. The diastolic murmur of aortic regurgitation and a characteristic Austin Flint murmur were also heard. Some doubt has been expressed as to whether the murmur in this case actually was produced by the network, as assumed by Alvarez and Herrmann, since there were other more common pathologic conditions present. The general opinion is that the network produces no symptoms or signs and is of interest clinically only as affording an occasional source of pulmonary embolism.

The following typical case of this congenital defect came under my observation in May 1937 and is of especial interest because of the presence of a murmur almost identical with that described by Alvarez and Herrmann, which suggests the probability that the network at times may give rise to an auscultatory sign.

### REPORT OF CASE

J. M., a Negro fisherman, aged 40, was admitted to the medical floor of the Roper Hospital May 3, 1937, five days after his discharge from the surgical floor, where he had been treated for extravasation of urine. His previous history included syphilis and gonorrhea, and at the age of 30 he had an illness characterized by migratory arthritis. There was no history of previous heart disease. The diagnosis on admission was pneumonia. On physical examination fine rales were heard scattered over the right side of the chest anteriorly, in the left axilla and in the left side of the chest posteriorly from the third to the sixth rib. The blood pressure was 220 systolic, 130 diastolic; the arteries were thickened. The heart was enlarged and a systolic murmur at the apex transmitted to the left axilla and gallop rhythm were noted. The chief interest was centered on a continuous humming murmur with systolic accentuation at the sternal end of the fourth and fifth left interspaces, which resembled the so-called venous hum. The area of distribution was quite limited, the murmur fading away as the stethoscope approached the apex, the aortic or the pulmonary valve region.

1. Chiari, Hans: *Netzbildungen im rechten Vorhofe des Herzens*, Beitr. z. path. Anat. u. z. allg. Path. 22:1, 1897.

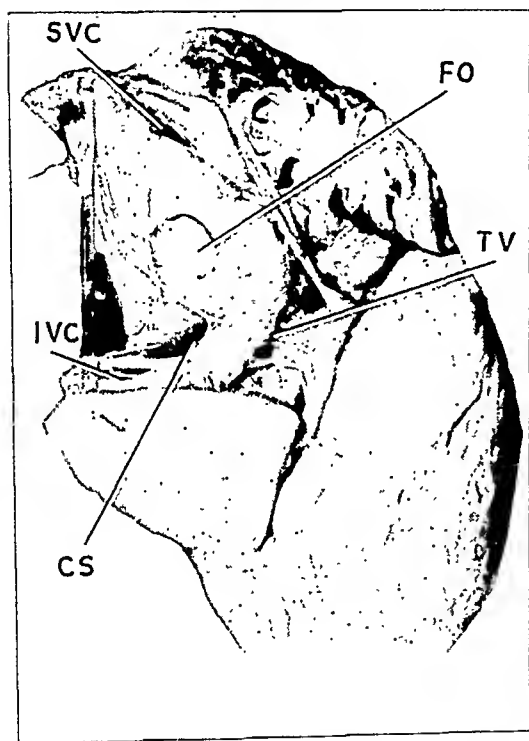
2. Yater, W. M.: *The Paradox of Chiari's Network*, Am. Heart J. 11:542 (May) 1936.

3. Helwig, F. C.: *The Frequency of Anomalous Reticula in the Right Atrium of the Human Heart "Chiari Network": Report of Eight Cases*, Am. J. Path. 8:73 (Jan.) 1932.

4. Alvarez, J. A., and Herrmann, G. W.: *Unusual Signs from an Expansive Chiari Network Along with Signs of a Syphilitic Aortic Regurgitation*, Am. J. Syph. 15:532 (Oct.) 1931.

The urine was of normal specific gravity and contained a small amount of albumin and occasional granular casts. The blood showed sickle cells but nothing else of significance. Kolmer and Kline tests were negative. The complement fixation test for gonococcal infection was markedly positive. Urea nitrogen was 150 mg. per hundred cubic centimeters of blood, and creatinine 9.6 mg. per hundred cubic centimeters. An electrocardiogram showed normal axis, depressed S-T interval in leads 2 and 3, and apparent inversion of T<sub>1</sub>. The eyegrounds showed sclerotic arteries, numerous areas of retinal degeneration, probably the result of old hemorrhages, and one or two recent hemorrhages in both fundi. A roentgenogram indicated moderate general enlargement of the heart and generalized increase in bronchovesicular markings throughout both lungs.

This was clearly a case of hypertensive cardiovascular disease with uremia and bronchopneumonia. The unusual murmur was difficult to explain and occasioned much discussion and difference of opinion. Its resemblance to the murmur described by



Right atrium partly cut away to show the network: S V C, superior vena cava; I V C, inferior vena cava; C S, coronary sinus; F O, fossa ovalis; T V, tricuspid valve.

Roger in 1897 as characteristic of an uncomplicated defect of the interventricular septum was very striking. The bruit de Roger is continuous, is heard along the left sternal border, best at the third interspace or at the left of the xiphoid cartilage, and is not transmitted. This similarity in location and in character led to the diagnosis of patency of the interventricular septum.

The pathologic diagnosis after autopsy was hypertensive cardiovascular disease with arterial nephrosclerosis, and lobular pneumonia as a terminal event. When the heart was opened a characteristic network of fibers was found in the right auricle with no septal or valvular defect.

The following description of the heart is given by Dr. T. M. Peery, who performed the autopsy:

The heart was greatly enlarged, weighing 575 Gm. Its epicardial surface was smooth and glistening. On section the myocardium of the left ventricle averaged about 1.6 cm. in thickness; that of the right ventricle about 2 to 4 mm. All the valves appeared normal. The aortic ring measured 7.3 cm. in circumference, the mitral 10 cm., the pulmonary 9 cm. and the

tricuspid 12 cm. In the right atrium was a network of fibers, the central portion of which lay free in the orifice of the inferior vena cava and the cavity of the atrium. The total length of the network varied from 5 to 8 cm. Its upper and anterior attachment extended in a more or less straight line, 3 cm. in length, from the right border of the superior vena cava, just below and behind the lower margin of the crista terminalis, downward along the right wall of the atrium to a point about 5 mm. above the entrance of the inferior vena cava. At its attachment to the atrial wall it was a fenestrated membrane, roughly triangular, with numerous large defects, from the apex of which, and from its inferior border, numerous slender bands arose, which branched and joined other bands in an irregular fashion. The opposite attachment of the network extended linearly from the right margin of the inferior vena cava, upward and to the left, following the limbus of the inferior vena cava for about 2.5 cm., and then crossed the open mouth of the coronary sinus, which in this case had no other valve protecting it. At its left margin the membrane was triangular, measuring 1 cm. at its base and about 6 mm. in height, and was not fenestrated. From the apex the fibers converged, branching and joining other branches as at the other attachment. The fibers arising from the upper end of the right line passed to the lower end of the left, and those from the lower end of the right to the upper end of the left, so that as the membrane was stretched it appeared to be slightly twisted on itself. At the center of the network it was composed of from five to eight intercommunicating fibers of about the thickness of a slender chorda tendinea, as shown in the accompanying illustration. The foramen ovale can be entered by a flat probe, although it was at such an angle and so well protected by flaps on both the right and left atrial surfaces that it was probably not functionally open. The interventricular septum was intact, although the membranous portion of the septum was thin and transparent. The ductus arteriosus was closed. No other congenital abnormality of the heart was noted. The coronary arteries were patent but showed small atheromatous plaques.

#### COMMENT

The only importance that has been attached to Chiari's network is the possibility of its affording a site for thrombus formation, which may become the source of a pulmonary embolus, as in the case reported by Ebblinghaus.<sup>5</sup> No physical signs have been noted except by Alvarez and Herrmann. In the case reported here there was no abnormality of the heart other than a partial patency of the foramen ovale, which was functionally closed, and it is very improbable that the murmur which was heard could be produced by the foramen ovale under such conditions. In the absence of patency of the ductus arteriosus or of any other defect it seems reasonable to conclude that the continuous murmur heard actually was produced by the network. The similarity between the murmur in this case and the murmur described by Alvarez and Herrmann is very striking, and since the network was the only point of identity in the pathologic changes observed in the two cases the assumption that it produced the murmur in both would appear warranted. That no murmur was observed when the patient was under treatment in the surgical ward possibly may be explained by its limited area of distribution and its situation. In a routine examination to determine the presence of valvular defects it might easily be overlooked, as it was not heard at any of the valve areas. Furthermore, it varied in distinctness so that at times it was heard with difficulty. The resemblance of the murmur to the bruit de Roger is so close that the differentiation of the two would be difficult or impossible.

#### CONCLUSION

A continuous murmur occupying the site of the murmur reported here may be a sign of Chiari's network as well as of patency of the interventricular septum.

5. Ebblinghaus, H.: Zur Kasuistik der kongenitalen Herzfehler und deren möglichen Folgen, München. med. Wchnschr. 51: 797, 1904.

## The Chemical Laboratory

IN THE JOURNAL, NOV. 6, 1937, THERE APPEARED, UNDER THE AUSPICES OF THE A. M. A. CHEMICAL LABORATORY, A NUMBER OF REPORTS DEALING WITH ELIXIR OF SULFANILAMIDE-MASSENGILL. TWO OF THESE WERE ENTITLED "PRELIMINARY REPORT OF TOXICITY STUDIES ON RATS, RABBITS AND DOGS (FOLLOWING INGESTION IN DIVIDED DOSES OF DIETHYLENE GLYCOL, ELIXIR OF SULFANILAMIDE-MASSENGILL AND 'SYNTHETIC' ELIXIR)," BY DR. E. M. K. GEILING, JULIUS M. COON AND DR. E. W. SCHOEFFEL, AND "PATHOLOGIC EFFECTS FOLLOWING THE INGESTION OF DIETHYLENE GLYCOL, ELIXIR OF SULFANILAMIDE-MASSENGILL, 'SYNTHETIC' ELIXIR OF SULFANILAMIDE AND SULFANILAMIDE ALONE" BY DR. PAUL R. CANNON. IN THE EARLY COMMUNICATIONS IT WAS STATED THAT DR. GEILING AND CANNON WOULD MAKE FURTHER STUDIES. THESE ARE REPRODUCED HEREWITH UNDER THE AUSPICES OF THE A. M. A. CHEMICAL LABORATORY.

PAUL NICHOLAS LEECH, Director,  
A. M. A. Chemical Laboratory.

### PATHOLOGIC EFFECTS OF ELIXIR OF SULFANILAMIDE (DIETHYLENE GLYCOL) POISONING

#### A CLINICAL AND EXPERIMENTAL CORRELATION: FINAL REPORT

E. M. K. GEILING, M.D.  
AND

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CHICAGO

During the months of September and October 1937 at least seventy-six<sup>1</sup> human beings in various localities died as a result of poisoning by Elixir of Sulfanilamide-Massengill.<sup>2</sup> By analysis,<sup>3</sup> the A. M. A. Chemical Laboratory found this preparation to be essentially a 10 per cent solution of sulfanilamide in about 72 per cent diethylene glycol, together with some coloring and flavoring agents. There were no contaminants such as mercury, the effects of which might have resembled the clinical symptoms produced by the elixir. Apparently the makers of this product were unaware of its possible toxicity and distributed it freely without having tested it adequately on animals. It had not been submitted to the Council on Pharmacy and Chemistry of the American Medical Association nor did the Food and Drug Administration of the United States Department of Agriculture know of its composition. Newspaper reports of deaths from this "new medicine" created consternation among many physicians who were using sulfanilamide. Hundreds of inquiries were received by the American Medical Association asking for information as to the nature of the causative agent and its possible antidote. To answer these pressing queries, experiments<sup>4</sup> were immediately undertaken by us at the request of the A. M. A. Chemical Laboratory. The elixir, its active components (pure diethylene glycol and sulfanilamide) and a "synthetic" composite were tested separately on groups of animals. Rats, rabbits and dogs were given the various drugs three times

daily in graded doses. The experiments were devised with the object of developing conditions which might simulate those in the human cases.

#### REVIEW OF THE LITERATURE PRIOR TO THE "ELIXIR" EPISODE

There were in the literature reports dealing with the toxicity of diethylene glycol by Von Oettingen and Jirouch<sup>5</sup> and by Haag and Ambrose.<sup>6</sup> The first named authors studied the acute toxicity of the compound and noted hydropic degeneration of the kidney. Haag and Ambrose, in addition to observing the acute toxicity in rats, also studied the chronic effects of adding it to the drinking water. They found that concentrations of from 3 per cent to 10 per cent proved rapidly fatal. Lower concentrations (0.03 per cent to 1.0 per cent) did not significantly affect the growth of their animals, which were killed and examined after 100 days of observation; no liver or kidney damage was observed. No pathologic changes, apparently, were reported at autopsy on those dying of large doses of diethylene glycol. Although not directly stated in these papers, it would appear that Von Oettingen and Jirouch studied this compound from the point of view of its industrial hazard, and Haag and Ambrose appear to have investigated the compound with respect to its safety as a hygroscopic agent in cigarettes. The lack of more complete data concerning the chronic effects of diethylene glycol should have made it even more imperative that it should not have been used as a solvent in therapeutic preparations intended for repeated use in relatively large amounts until additional information concerning its chronic toxicity and fate in the animal body had been secured.

Barber<sup>7</sup> in 1934 reported five deaths from poisoning in factory workers exposed to dioxane, the anhydride of diethylene glycol (diethylene dioxide). At autopsy extensive hemorrhagic nephritis and necrosis of the central part of the liver were observed. The absence of fatty change in the liver in the fatal cases is of particular interest, since such changes do occur with other known poisoning agents on the liver, such as alcohol and chloroform.

In 1935 de Navasquez<sup>8</sup> reported tubular necrosis of the kidneys accompanied by hepatic changes due to experimental dioxane poisoning.

When the "elixir" episode occurred there were also no experiments recorded in the literature dealing with the chronic toxic effects of sulfanilamide. In fact, in a later detailed account of the toxicity of sulfanilamide in animals, Marshall, Cutting and Emerson<sup>9</sup> stated: "Despite the widespread use of sulfanilamide in the treatment of certain bacterial infections, very scanty data are available concerning its toxicity for animals. Several observers have reported on its toxicity, using very limited numbers of animals." However, the available data indicate that sulfanilamide is relatively non-toxic for animals. Furthermore, under the experimental conditions recorded there were no marked renal and

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The funds for the experimental work were supplied by the A. M. A. Chemical Laboratory and by a grant from the Committee on Therapeutic Research of the Council of Pharmacy and Chemistry of the American Medical Association.

1. Several sources indicate that the number of deaths was more than 100. The figure quoted here represents the number of confirmed deaths.

2. Elixir of Sulfanilamide-Massengill: 11, editorial, J. A. M. A. 109: 1724 (Nov. 20) 1937.

3. Schoeffel, E. W.; Kreider, H. R., and Petersen, J. B.: Chemical Examination of Elixir of Sulfanilamide-Massengill, J. A. M. A. 109: 1532 (Nov. 6) 1937.

4. Geiling, E. M. K.; Coon, J. M., and Schoeffel, E. W.: Preliminary Report of Toxicity Studies on Rats, Rabbits and Dogs, J. A. M. A. 109: 1532 (Nov. 6) 1937.

5. Von Oettingen, W. F., and Jirouch, E. A.: Pharmacology of Ethylene Glycol and Some of Its Derivatives, J. Pharmacol. & Exper. Therap. 42: 355 (Aug.) 1931.

6. Haag, H. B., and Ambrose, A. M.: Studies on the Physiological Effect of Diethylene Glycol, J. Pharmacol. & Exper. Therap. 59: 93 (Jan.) 1937.

7. Barber, Hugh: Hemorrhagic Nephritis and Necrosis of the Liver from Dioxan Poisoning, Guy's Hosp. Rep. 84: 267 (July) 1934.

8. de Navasquez, S.: Experimental Tubular Necrosis of the Kidneys Accompanied by Liver Changes Due to Dioxan Poisoning, J. Hyg. 35: 540-548 (Dec.) 1935.

9. Marshall, E. K., Jr.; Cutting, W. C., and Emerson, Kendall, Jr.: The Toxicity of Sulfanilamide, J. A. M. A. 110: 252 (Jan. 22) 1938.

hepatic lesions produced by this drug. It may also be emphasized that extensive use in human beings indicate that, when properly employed, it is reasonably safe.

#### LITERATURE FOLLOWING THE EPISODE

Simultaneously with the publication of our studies on the toxicity of the elixir and its components, there

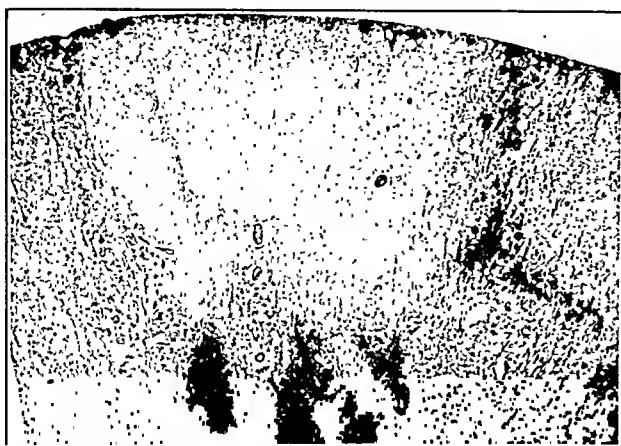


Fig. 1 (case 9).—Section of the kidney showing focal cortical infarction with peripheral hemorrhage. Reduced from a photomicrograph with a magnification of 16 diameters.

appeared two independent reports on the toxic effects of diethylene glycol. Kesten, Mulinos and Pomerantz<sup>10</sup> reported that diethylene glycol administered to rats by mouth and to rabbits intravenously caused severe injury to the epithelium of the renal convoluted tubules, accompanied by anuria and uremic coma. The liver and adrenals were less regularly involved. Three per cent diethylene glycol (0.9 cc. per rat daily) in the drinking water killed about 50 per cent of the rats within two months; 5 per cent killed 25 per cent within a week. Rabbits were given single injections intravenously. Some animals died and others were killed at varying periods after injection. Significant pathologic lesions were observed in the kidneys of about half of the experimental animals. Holck<sup>11</sup> also reported experiments on rats given diethylene glycol in food and water. A 5 per cent solution of diethylene glycol in the drinking water killed his rats in about eight days, but the pathologic results were inconclusive.

#### ANIMAL EXPERIMENTS

Our toxicity experiments were undertaken on normal rats, rabbits and dogs. The animals had free access to food and water. In our experiments were used (1) pure diethylene glycol, (2) pure sulfanilamide, (3) Elixir of Sulfanilamide-Massengill and (4) "Synthetic" elixir of sulfanilamide compounded by the A. M. A. Chemical Laboratory with pure substances in approximately the same proportions as found in the Massengill elixir.

Appropriate chemical tests ruled out the possible presence of mercury and of impurities present in the Massengill preparations.

The animal experiments were devised (1) to determine the toxic and lethal doses of each of the substances when given in relatively small doses by stomach tube

three times a day. This information seemed particularly necessary since no data on this point were available in the literature; (2) to reproduce in healthy experimental animals in about the same period of time, the clinical and pathologic picture as presented in patients who had taken fatal doses of the Elixir of Sulfanilamide.

There is considerable species, as well as individual, variation in the toxicity of the drugs used under the conditions of our experiments. Rabbits were found to be the most sensitive experimental subjects. The doses used in our first experiments were larger than the amounts that proved fatal to the human beings, which were based on weight relationships. However, in later experiments carried out by Mr. A. Rodaniche on rabbits, doses comparable to the human doses proved fatal in about 30 per cent of the animals. This point is illustrated in table 1. These data are representative of more than fifty such experiments conducted over a similar range of dosages. The wide variations in susceptibility are evident from the table. Data with other species are published elsewhere.<sup>4</sup>

The course of the intoxication in the animals was noted frequently. A toxic syndrome<sup>4</sup> developed which simulated closely the average clinical picture in the human fatal cases; this is described later. In rats, after about the fourth dose, the fur became ruffled, there was increased thirst and some diuresis, food was refused, urinary excretion later became scanty, and eventually complete anuria developed. The animals exhibited an



Fig. 2 (case 11).—Section of the kidney showing diffuse cortical infarction with recent hemorrhage. Reduced from a photomicrograph with a magnification of 17 diameters.

increased rate and depth of respiration and finally died in coma. Rabbits exhibited essentially the same picture but were more sensitive than rats. Dogs too behaved similarly, but the dosage could not be so accurately determined because of the tendency of the dogs to vomit after the administration of both diethylene glycol and the elixirs.

10. Kesten, H. D.; Mulinos, M. G., and Pomerantz, Leo: Renal Lesions Due to Diethylene Glycol, *J. A. M. A.* 109: 1509 (Nov. 6) 1937.  
11. Holck, H. G. O.: Glycerin, Ethylene Glycol, Propylene Glycol and Diethylene Glycol, *J. A. M. A.* 109: 1517 (Nov. 6) 1937.



## CONCLUSIONS FROM ANIMAL EXPERIMENTS

Based on more than 100 necropsies and a considerably larger number of experiments, the following summation and conclusions seem warranted:

1. Diethylene glycol was the chief toxic component of Elixir of Sulfanilamide-Massengill examined, because experimental animals given diethylene glycol alone exhibited essentially the same clinical course and pathologic changes in the kidney and liver<sup>12</sup> as did those treated with similar doses of Elixir of Sulfanilamide-Massengill or a "synthetic" elixir containing the ingredients in the same proportion as found by analysis in the Massengill preparation.

2. Sulfanilamide alone, if given in doses of 0.2 Gm. per kilogram three times a day, did not prove fatal to rats, rabbits or dogs after eight or more divided doses. However, when sulfanilamide was given in this dosage in the form of Elixir of Sulfanilamide-Massengill or in the "synthetic" elixir, either preparation was fatal to experimental animals and they presented a clinical and

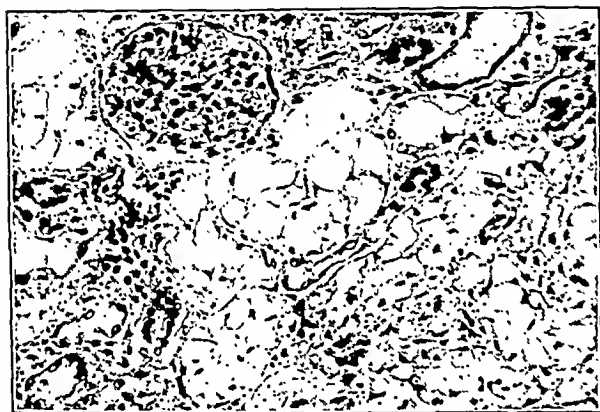


Fig. 3 (case 2).—Section from the kidney. Note the extensive hydropic degeneration of tubular epithelium with obliteration of lumens, the normal glomerulus and the absence of leukocytic infiltration. Reduced from a photomicrograph with a magnification of 360 diameters.

pathologic picture closely resembling that reported for the human cases in which death occurred after ingestion of the Massengill elixir.

3. Although animals receiving sulfanilamide in doses of 0.2 Gm. per kilogram three times a day did not succumb, several of them had convulsions. Numerous animals were killed after having received eight or more divided doses of the drug. None of them had anuria, nor did they exhibit the renal and hepatic changes found in animals treated with either the Massengill or the "synthetic" elixir. While we do not believe that the sulfanilamide had any important part in the intoxications resulting from the elixir of sulfanilamide, one must not overlook the possible damage to tissues that may result when sulfanilamide is administered to experimental animals or to human beings with impaired renal function.<sup>13</sup>

4. The pathologic picture was essentially similar in the three species of animals, whether given the Elixir of Sulfanilamide-Massengill, the "synthetic" elixir of sulfanilamide or diethylene glycol alone. The pathologic

changes were those of a severe chemical nephrosis with intracellular edema of most of the epithelial cells of the convoluted tubules, resulting in tubular obstruction by compression and by the intraluminal formation of casts. This intracellular edema in the kidneys leads to internal disorientation of cells of the convoluted tubules and offers an explanation for the tubular obstruction.



Fig. 4 (case 9).—Section of the kidney showing the severe hydropic degeneration, the normal glomerulus and the absence of leukocytic infiltration. Reduced from a photomicrograph with a magnification of 225 diameters.

anuria, uremia and death. Whether this intracellular change is due to cellular anoxia, with consequent intracellular edema, necrosis and cellular desquamation, or whether it is due to hygroscopic properties of diethylene glycol is a question that must await further investigation.

These changes in the kidneys and liver were not due to sulfanilamide. With sulfanilamide, the microscopic changes were slight and consisted of moderate fatty degeneration in some of the collecting tubules in the dogs and to a lesser degree in the rats. The livers of both dogs and rats showed no hydropic degeneration and practically no fatty degeneration. There is but little question therefore that the severe chemical nephrosis



Fig. 5 (case 6).—Section of the kidney showing focal hydropic degeneration and obliteration of lumens. Reduced from a photomicrograph with a magnification of 360 diameters.

of the dogs, rats and rabbits is due to diethylene glycol alone. We cannot say, however, that under conditions of anuria, with retention of sulfanilamide in the blood stream, some tissue damage by sulfanilamide may not be added to that of diethylene glycol.

12. Cannon, P. R.: Pathologic Effects Following the Ingestion of Diethylene Glycol, Elixir of Sulfanilamide-Massengill, Synthetic Elixir of Sulfanilamide and Sulfanilamide Alone, *J. A. M. A.* 109:1536 (Nov. 6) 1937.

13. Marshall, E. K., Jr.; Kendall, Emerson, Jr., and Cutting, W. C.: Para-Aminobenzenesulfonamide, *J. A. M. A.* 108:953 (March 20) 1937.

COMPOSITE CLINICAL PICTURE IN FATAL  
HUMAN CASES

The following is a composite clinical picture observed in patients who died following the ingestion of variable amounts of Elixir of Sulfanilamide. The symptoms observed are taken from reports published by Homer A.

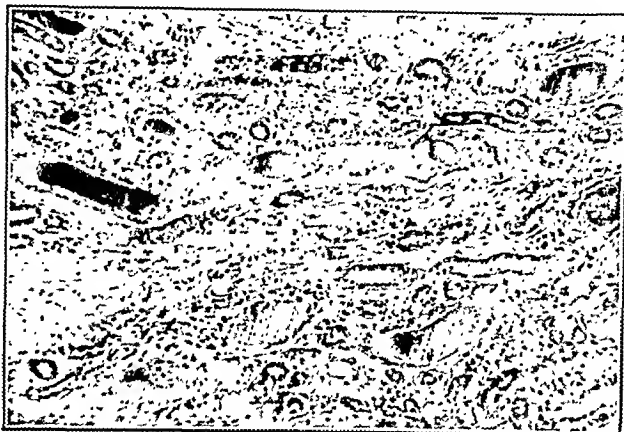


Fig. 6 (case 4).—Section showing hyaline casts in the lumens of the collecting tubules. Reduced from a photomicrograph with a magnification of 225 diameters.

Ruprecht and I. A. Nelson of Tulsa,<sup>14</sup> by O. E. Hagebusch<sup>15</sup> and by K. M. Lynch,<sup>16</sup> and also from communications by physicians to Dr. Paul N. Leech, Secretary of the Council on Pharmacy and Chemistry of the American Medical Association, and from reports obtained by inspectors of the Federal Food and Drug Administration. The patients ranged in age from 11 months to 70 years; the dosage of Elixir of Sulfanilamide administered ranged from 1½ to 6 ounces (45 to 180 cc.).

The onset of symptoms was variable; in one instance the patient complained of symptoms immediately after the first dose. Patients usually complained first of a

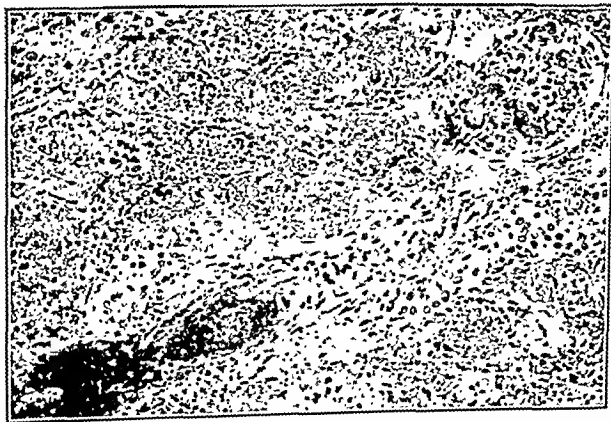


Fig. 7 (case 11).—Section of the kidney showing hyaline necrosis of the blood vessel walls and hyaline thrombosis in the area of recent infarction of the cortex. Reduced from a photomicrograph with a magnification of 260 diameters.

sensation of "heartburn," followed by nausea, abdominal cramps, dizziness, malaise and vomiting, with diarrhea occasionally and later pain in the back over the region

of the kidney and in the abdomen. In fact, the condition was thought by some physicians to be an acute abdominal process and surgical intervention was recommended, although this was not carried out. These symptoms occurred about twenty-four hours after medication was started and were followed by oliguria and later anuria. The patients became drowsy and had slight puffiness of the face and slight jaundice in some instances. They became progressively comatose and died in from two to seven days after onset of anuria in uremic coma. The characteristic physical and clinical conditions were cutaneous pallor without cyanosis, slow and deep respirations and varying degrees of pulmonary edema, as manifested by rales throughout both lungs. There were subnormal temperatures and slow pulse, tenderness over the kidneys and upper part of the abdomen and edema of the dependent parts with ascites. The blood pressure was not significantly elevated. There was no anemia, but there was usually a moderate leukocytosis. The urine was scanty and contained four plus albumin, casts and occasional leukocytes.<sup>16a</sup> The nonprotein nitrogen of the blood rose to as high as 200 mg. and the creatinine went up in some patients to 12 mg. per hundred cubic centimeters.



Fig. 8 (case 1).—Section of the kidney showing hyaline necrosis of the vascular walls of afferent glomerular vessels in a region of cortical infarction. Reduced from a photomicrograph with a magnification of 260 diameters.

It may also be stated in passing that there is considerable variation in responsiveness of patients to the elixir. At least 100 persons took doses of the elixir varying from 1 to 8 ounces (30 to 240 cc.) without serious effects, although some did complain of gastric disturbances.

## PATHOLOGIC CHANGES IN HUMAN CASES

Of the seventy-six persons who died as a result of ingestion of Elixir of Sulfanilamide, we have been able to examine the tissues from fifteen, and this report deals particularly with twelve of these. The necropsy material was sent to us through the aid of or by federal inspectors of the Food and Drug Administration of the U. S. Department of Agriculture, by the secretary of the Council on Pharmacy and Chemistry of the American Medical Association and by several pathologists who performed the necropsies.<sup>17</sup>

16a. Similar changes are found in dogs poisoned with diethylene glycol (unpublished data).

17. The following pathologists, who were generous in their cooperation, supplied us with the material for the present study: Dr. Omer E. Hagebusch, St. Louis (cases 1, 2, 3, 4, 5); Dr. Ralph Monger, Knoxville, Tenn. (cases 6, 7); Dr. K. M. Lynch, Charleston, S. C. (cases 8, 9, 10); Dr. R. L. Thompson, St. Louis (case 11) and Dr. Paul Brindley, Galveston, Texas (case 12).

14. Ruprecht, H. A., and Nelson, I. A.: Clinical and Pathological Observations, J. A. M. A. 109:1537 (Nov. 6) 1937.

15. Hagebusch, O. E.: Necropsies of Four Patients Following Administration of Elixir of Sulfanilamide-Massengill, J. A. M. A. 109:1537 (Nov. 6) 1937.

16. Lynch, K. M.: Diethylene Glycol Poisoning in the Human, South. M. J. 31:134-137 (Feb.) 1938.

Table 2 is a brief and incomplete summary of the cases reviewed by us and includes the clinical diagnosis, amounts of elixir of sulfanilamide administered, the age of the patient and the like. Three of these have been reported elsewhere (cases 8, 9 and 10) and case 12 is to be reported by Drs. Brindley and Kelsey in a future issue of the *Texas State Journal of Medicine*. We shall attempt, therefore, only to summarize the necropsy results as given in the literature and as obtained from the necropsy protocols and material sent to us for study. Incompleteness of data is due to the fact that many of the necropsies were performed under unfavorable circumstances for weighing organs or because of limitation of permits for necropsy, but in all instances the liver and spleen were carefully examined grossly and microscopically.

In the original telegraphic report sent to the headquarters office of the American Medical Association on Oct. 15, 1937, by Drs. Homer A. Ruprecht and I. A. Nelson,<sup>14</sup> describing the postmortem observations in five cases of poisoning by Elixir of Sulfanilamide at Tulsa, Okla., the following features were mentioned: a tawny but not enlarged liver; kidneys mottled and purple, in severe cases showing superficial cortical necrosis;



Fig. 9 (case 6).—Section of the 900 Gm. liver showing focal central hydropic degeneration of hepatic cells with absence of marked inflammatory reaction or of actual necrosis. Reduced from a photomicrograph with a magnification of 60 diameters.

pathologic changes in the other viscera insignificant, and inconstant accumulations of clear, straw-colored fluid in the peritoneal, pleural and pericardial cavities. Microscopic examination showed "a consistent hydropic tubular nephrosis with central degeneration of liver with cells showing foamy cytoplasm."

A few days later, Dr. O. E. Hagebusch<sup>15</sup> reported to the A. M. A. headquarters the results of necropsies in four cases at East St. Louis, Ill., as follows: "pulmonary edema, marked nephritis with hemorrhage into the cortex of the kidney, marked hemorrhage into the pericardium, mucosa of the stomach and duodenum and into the serous surfaces of lung and liver. The liver is pale, edematous and enlarged." At about the same time two patients died in Memphis, Tenn., after ingestion of the elixir and the postmortem examinations by Dr. Harry C. Schmeisser, T. C. Moss and C. E. Gillespie revealed a similar picture. Finally, early in October, four persons died in Charleston, S. C., after ingestion of the elixir and necropsies by Dr. K. M. Lynch<sup>16</sup> revealed the general observations just described.

All these observers recognized the unusual nature of the pathologic changes, and both Ruprecht and Nelson,

and Schmeisser, Moss and Gillespie noted their similarity to those of dioxane poisoning reported by Barber and de Navasquez. Subsequent studies have but served to emphasize the essentially identical pathologic effects in the kidneys and livers of human beings poisoned by Elixir of Sulfanilamide, and of animals given toxic

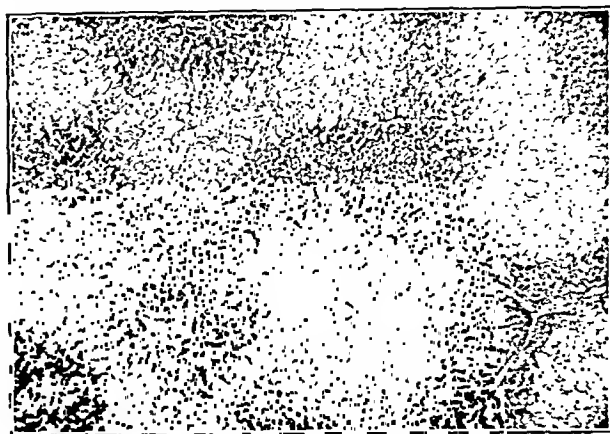


Fig. 10 (case 12).—Section of the 2,430 Gm. liver showing focal central hydropic degeneration of hepatic cells with absence of cellular disintegration. Note the shrunken pyknotic nuclei in the areas of hydropic degeneration. Reduced from a photomicrograph with a magnification of 60 diameters.

doses by mouth of either dioxane or diethylene glycol. There are apparently no known chemical substances other than these particular glycols which cause such a distinctive type of pathologic lesion in the liver and kidney.

The composite results of necropsy in these twelve cases may be summarized as follows: In several there was generalized edema (ascites, hydrothorax, hydropericardium and edema of the lungs) and, in some, recent hemorrhages into the gastrointestinal tract and lungs, evidences of increased capillary permeability.

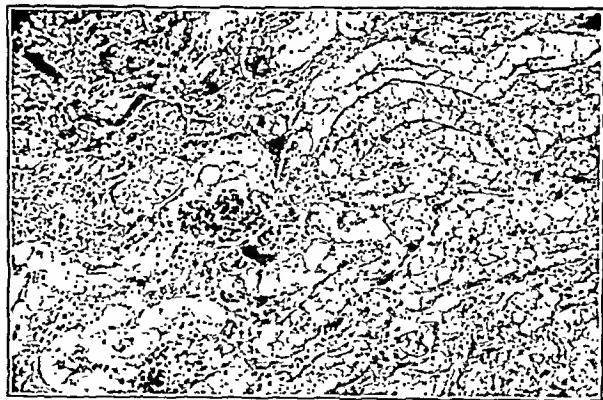


Fig. 11 (dog 6).—Section of the kidney of a dog given 0.8 Gm. per kilogram of body weight of Elixir of Sulfanilamide-Massengill over a period of four days. It died with symptoms of loss of appetite, vomiting, rigidity of the hind legs, weakness, dyspnea, coma, opisthotonos, extensor rigidity of front legs and deviation of the head to the right. Note the diffuse hydropic degeneration of the epithelium of the convoluted tubules and the obliteration of the lumens, just as in the human fatal cases. Reduced from a photomicrograph with a magnification of 225 diameters.

presumably from the acidosis and uremia. Bronchopneumonia occurred in some patients but not in all. The principal pathologic changes were in the kidney and liver. The former was enlarged in all twelve cases and in one (case 12) weighed 500 Gm. In eight of the

twelve symmetrical cortical necrosis with recent hemorrhage, particularly at the corticomedullary border, was the conspicuous feature (figs. 1 and 2). These cortical infarcts were absent in the kidneys of one adult and in three children between the ages of 2 and 6 years. The kidneys were described as flabby, pale and swollen, and their surfaces bulged after sectioning.

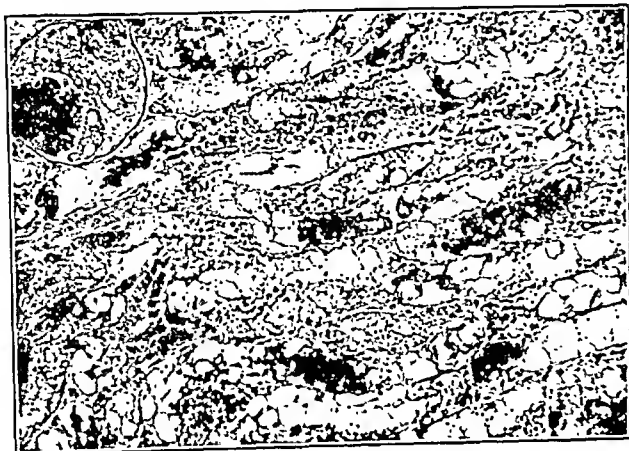


Fig. 12 (dog 7).—Section of kidney of a dog given 2.3 cc. of diethylene glycol by mouth per kilogram of body weight, three times a day over a period of seven days. The dog died with symptoms of weakness, loss of appetite, vomiting and tremors. Note the hydropic degeneration of tubular epithelium in the convoluted tubules. Reduced from a photomicrograph with a magnification of 225 diameters.

Microscopic examination revealed an unusual type of chemical nephrosis, the characteristic lesion being a severe vacuolation of the epithelium of the convoluted tubules, the so-called hydropic degeneration (figs. 3, 4 and 5). These cells appear "ballooned," as if the cytoplasm of each cell were a bag of water and there were no cytoplasmic material left to take the stain. The nuclei in such cells are shrunken and pyknotic and are absent in some. This profound swelling leads to complete obliteration of the lumens, and the anuria and uremia are most reasonably explained on the basis of mechanical stoppage of the flow of urine. Actual necrosis is not conspicuous in such cells, although some contain granular eosinophilic material in the cytoplasm, and there is some nuclear disintegration. The general picture suggests a "water-logging" of the cells rather than an effect of an extremely toxic protoplasmic poison. In some kidneys the epithelium of the convoluted tubules looks collapsed, as if the hydropic cells had ruptured and had liberated their contents. Here the lumens were open but seemed to be functionless. In other kidneys the hydropic degeneration was less conspicuous in some areas and here the convoluted tubules were lined with flattened cells in which at times were mitotic figures or giant nuclei, indicating attempts at regeneration. The glomeruli, in general, were but little affected except as they participated in the vascular changes associated with the cortical necrosis. In these areas of recent infarction the blood vessels, both small arteries and veins, contained hyaline thrombi, and the walls of many exhibited hyaline necrosis (figs. 6, 7 and 8). The infarcted area was infiltrated and surrounded by accumulations of red blood cells, and the tubules showed the characteristic changes of coagulation necrosis. Leukocytes were infiltrating these areas, although not more so, apparently, than is usual in an area of infarction. The collecting tubules usually contained hyaline casts, erythrocytes and accumulations of

leukocytes. Fat stains showed practically no fatty degeneration in the areas of hydropic degeneration.

The mechanism of action of diethylene glycol as it passes through the kidney is still uncertain. In view of the fact that diethylene glycol is a hygroscopic agent, owing presumably to the two hydroxyl groups in its molecule, we suggested in our preliminary report that its presence within the epithelial cell might cause intracellular absorption and retention of water with consequent intracellular edema. Furthermore, because it is an ether, dihydroxy-diethyl ether, its solvent powers may cause injury to the cell membrane, followed by imbibition of water from the surrounding fluids. Evidence has been put forward<sup>18</sup> that in the glycol group "only those containing one or more ether linkages cause hydropic degeneration of parenchymatous cells." The adverse effects in the kidneys, therefore, are apparently due more to the mechanical closure of the lumens from the swelling of the cells than to actual necrosis in its most severe aspects, although such a profound involvement of parenchymatous cells causes death of cells, particularly if the effect is intense or prolonged.

The circulatory changes leading to infarction, hyaline necrosis of blood vessel walls and thrombosis may be explained as secondary phenomena due to blood stasis and tissue anoxia following swelling of the kidney, although a direct toxic action of diethylene glycol cannot be excluded. It is interesting that the vascular changes have occurred mainly in human beings and to but a slight degree in the experimental animals. The similarity to the so-called symmetrical cortical necrosis of the kidneys is striking. Scriver and Oertel,<sup>19</sup> in their discussion of this condition, have suggested that it is probably due to "vasoparalysis of terminal arterial segments with resulting blood stasis and segmentary thrombosis with proximal extensions" due to strong irritation of the vascular segments, an explanation in

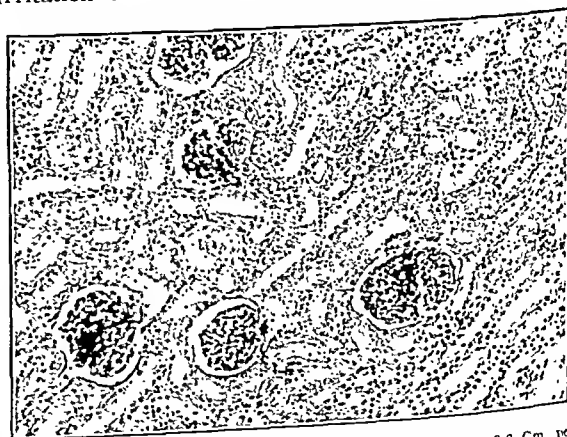


Fig. 13 (dog 3).—Section of the kidney of a dog given 0.2 Gm. per kilogram of body weight of sulfanilamide by mouth three times a day. The dog was killed eight days later. Note the essentially normal convoluted tubules and glomeruli with no evidences of hydropic degeneration or other degenerative change as revealed by hematoxylin and eosin stain. Reduced from a photomicrograph with a magnification of 225 diameters.

harmony with the experiments of Ricker and his students.<sup>19</sup> A similar effect may result from the action of diethylene glycol. De Navasquez<sup>20</sup> more recently has

18. Kesten, H. D.; Mulinos, M. G., and Pomerantz, Leo: *Pathologic Effects of Certain Glycols and Related Compounds*, Arch. Path. 23:759-760 (May) 1938.

19. Scriver, W. de M., and Oertel, Horst: *Necrotic Sequestration of the Kidneys in Pregnancy (Symmetrical Cortical Necrosis)*, J. Path. & Bact. 23:1071-1094 (Oct.) 1930.

20. de Navasquez, S.: *Bilateral Cortical Necrosis of the Kidney in Pregnancy*, J. Path. & Bact. 41:385 (Nov.) 1933.

concluded that the symmetrical cortical necrosis of the kidneys described by Barber<sup>7</sup> in human cases of dioxane poisoning was histologically identical with cortical necrosis of pregnancy. He thought also that in both conditions the necrosis of the walls of the intralobular arteries and their efferent glomerular branches led to ischemia and necrosis of the parenchyma.

stains, however, showed practically no fat in these cells, fatty degeneration occurring only in the hepatic cells at the margins. The nuclei were shrunken and pyknotic but not disintegrating, as a rule, though in some there was nuclear fragmentation, indicating a moderate degree of actual necrosis. Inflammatory infiltrations of leukocytes were minimal, if present at all (figs. 9 and 10).

TABLE 1.—The Effect on Rabbits of the per Kilogram Equivalent of the Clinical Doses of the Elixir of Sulfanilamide-Massengill and the Corresponding Amounts of Diethylene Glycol

Drug Given	Rabbit Number	Weight in Kilograms	Number of Days of Treatment	Total Number of Doses Given	Total Amount of Drug in Cc. Given per Kilogram of Body Weight	Day of Appearance of the Following Symptoms and Death						
						Apathy	Poor Appetite	Anuria	Refusal of Food	Prostration	Convulsions	Death
Elixir of Sulfanilamide-Massengill	1A	2.00	2	10	2.5	3	..	3	3	5	7	8
	2A	2.51	2	10	2.5	..	..	..	..	..	..	..
	3A	1.75	2	10	2.5	2	..	2	3	..	..	4
	7B	2.12	4	16	4.14	2	3	4	..	5	..	6
	1E	1.97	17	55	14.8	3	..	..	..	..	..	..
Diethylene glycol	3E	1.28	17	55	14.8	9	16	17	18	18	..	21
	1C	2.17	2	10	1.86	4	4	3	5	6	6	8
	7O	2.36	2	10	1.86	..	..	..	..	..	..	..
	6D	2.5	17	55	11.16	..	..	..	..	..	..	..
	3H	2.12	..	1	1.86	..	..	3	4	3	..	8
	4H	1.84	..	1	1.86	..	..	..	..	..	..	8
	1R	2.05	..	1	10.00	..	..	2	1	..	..	2
	4R	2.7	..	1	10.00	..	..	..	..	..	..	..

TABLE 2.—Summary of Cases Reviewed

Case	Age	Diagnosis	Amount Prescribed	Amount Taken	Comment	Autopsy by
1	24	Encephalitis.....	4 oz. Oct. 6, 1937; teaspoonful in water every 4 hours	Approximately 2 oz. from Oct. 7-11, 1937	Symptoms of poisoning began Oct. 11, 1937; sent to hospital Oct. 13; died Oct. 15	Dr. O. E. Hagebusch
2	3	Gonococcal urethritis, inguinal adenitis	1 oz. in 4 oz. mixture; teaspoonful in little water 4 times a day	Approximately 2 oz. of mixture	Symptoms of poisoning began 3 days after first dose; died Oct. 16, 1937	Dr. O. E. Hagebusch
3	6	Streptococcal sore throat	1½ oz. in 4 oz. mixture; teaspoonful in water	Approximately 2 oz. of mixture	Symptoms began Oct. 9, 1937; prescription stopped Oct. 11; died Oct. 18	Dr. O. E. Hagebusch
4	..	Epididymitis.....	4 oz. Oct. 9, 1937; teaspoonful in little water every 4 hours	Approximately 3 oz.; broke first bottle and had refilled without consulting physician; took ½ oz. from second bottle at which time physician called	Symptoms Oct. 13, 1937; stopped taking medicine Oct. 14; died Oct. 21	Dr. O. E. Hagebusch
5	..	Cystitis; enlarged prostate	4 oz.; teaspoonful in half glass of water	Approximately 2 oz.	Stopped prescription Oct. 12, 1937; died Oct. 18	Dr. O. E. Hagebusch
6	64	Obscure kidney infection	3 oz.; teaspoonful in half glass of water	Approximately 2 oz.	Symptoms Oct. 15, 1937; died Oct. 21	Dr. Ralph Monger
7	..	Chronic gonorrhea.....	5 oz. sulfanilamide tablets; took large dose of magnesium sulfate	Not ascertained	Admitted to hospital Oct. 8, 1937; died Oct. 10	Dr. Ralph Monger
8	30	Not stated.....	4 oz. Oct. 6, 1937	4 oz.	Died Oct. 13, 1937	Dr. K. M. Lynch
9	10	"Sore throat".....	4 oz. Sept. 24, 1937	Not ascertained	Died Oct. 12, 1937	Dr. K. M. Lynch
10	12	"Sore throat".....	2 oz. Sept. 24, 1937 (additional amount purchased without prescription)	4 oz.	Died Sept. 30, 1937	Dr. K. M. Lynch
11	62	Pyelitis.....	4 oz.; 2 teaspoonfuls every 4 hours for first 24 hours; then 1 teaspoonful every 4 hours, Oct. 9	2½ oz.; discontinued Oct. 16, 1937	Symptoms Oct. 15, 1937; died Oct. 20	Material from R. L. Thompson
12	20	Acute gonorrheal infection	6 oz.; 2 teaspoonfuls every 4 hours, Oct. 1, 1937	4½ oz.	Symptoms Oct. 4, 1937; stopped taking medicine Oct. 4; died Oct. 9	Dr. M. P. Kelsey

The livers were recorded as enlarged in all cases but one (case 6), in which it weighed only 900 Gm. The largest liver was found in case 12, in which it weighed 2,430 Gm. They were described as "tawny" or yellowish, although not bile stained, with pale, soft surfaces which bulged after sectioning. They presented the opposite picture of chronic passive congestion in that the centers of the lobules were light colored and the peripheries were darker. Microscopic examination revealed in all a central hydropic degeneration of the hepatic cells, with the cells "ballooned" and with the cytoplasm practically devoid of stainable material. Fat

The changes found in other organs were insignificant, other than congestion and hemorrhages of the stomach and intestine, which may have been a late effect of the uremia and terminal heart failure.

The similarity in dogs between the effects of diethylene glycol alone and of comparable amounts of Elixir of Sulfanilamide are shown in figures 11 and 12, where the extensive hydropic degeneration of epithelium of the proximal convoluted tubules is well seen. That the effect is not due to sulfanilamide alone is shown in figure 13, the reproduction of a photomicrograph from the kidney of a dog given twenty-one doses of sulfanil-



amide by mouth, 0.2 Gm. per kilogram three times a day. The kidney is essentially normal so far as hematoxylin and eosin staining is a criterion. As a matter of fact, frozen sections and fat stains showed a moderate fatty degeneration of epithelium in the collecting tubules, most marked near the corticomedullary border but minimal in the tubules most affected by diethylene glycol.

## COMMENT

The similarity between the clinical course and the pathologic picture of the fatal human cases and that observed by us in the experimental animals affords conclusive proof that the chief toxic agent in Elixir of Sulfanilamide was the diethylene glycol. We showed this substance to have a cumulative effect. Evidently the time interval between doses and the concentrations in which the elixir was recommended for human use exceeded the capacity of the body to handle the drug without producing serious injury.

Experiments are now in progress to determine the manner of excretion and the levels at which different species of animals can handle diethylene glycol.

We are permitted to state that Dr. Herbert O. Calvery, chief pharmacologist of the Food and Drug Administration, Washington, D. C., and his staff are conducting experiments which are in general accord with our own observations.

The fact that increasing numbers of new chemicals are being introduced into therapeutics serves to direct attention anew to the necessity of adequate toxicologic studies on such compounds which are to be used in medical practice. It is only by precautions of this sort that future tragedies similar to the elixir episode will be avoided. The new food and drug act is intended to prevent, so far as possible, the introduction of new remedies which have not been satisfactorily tested on experimental animals. It is unfortunate that, in the past, too many drugs have been introduced for use in human beings without adequate preliminary studies of their possible injurious effects, and in some instances drugs have been indiscriminately marketed without any preliminary knowledge of their toxic potentialities.

A satisfactory program of preliminary trials for a new drug was outlined by Leake<sup>21</sup> in a discussion of drug policy presented before the Section on Pharmacology and Therapeutics of the American Medical Association at its annual session in 1929. It is interesting to note the clearness with which Leake anticipated the conditions responsible for the elixir episode as described in the government report.<sup>22</sup> In his paper, he states, "many drug firms make the mistake of believing that their chemists can furnish trustworthy pharmacologic opinion. Indeed, some eminent chemists, impatient with careful pharmacologic technic, have ventured to estimate for themselves the clinical possibilities of their own synthetics. . . . There is no short cut from chemical laboratory to clinic, except one that passes too close to the morgue."

It is important to recognize that, in the examination of a drug with a view to its use in therapeutics, the following conditions are essential:

1. If at all possible, the exact composition (qualitative and quantitative) should be known; or, if not

obtainable, the detailed method of preparation of the product.

2. Acute toxicity studies on a sufficient number of laboratory animals of different species should be made; studies on one species alone may be very misleading.

3. Chronic toxicity experiments at varying dosage levels and with different species must be performed in order that any possible cumulative effect of the drug may be noted.

4. Careful and frequent observations of the animals are necessary, so that a composite picture of the clinical course is available. The data on many drugs are very deficient in this respect.

5. Careful pathologic examination of the tissues with appropriate stains is necessary.

6. Effects of the drug on animals with experimental lesions of various important excretory or detoxifying organs, especially of the kidneys and liver, should be studied.

7. The rate of absorption and elimination of the drug, its path and manner of excretion, and the concentration levels in the blood and tissues at varying times after administration must be determined.

8. The possible influence of the presence of certain foodstuffs or drugs should be noted. For example, magnesium sulfate should not be administered to a patient undergoing treatment with sulfanilamide.

9. Careful examinations for idiosyncrasies or untoward reactions should be made.

It is recognized that some will consider these safeguards to be too rigid and that they may simply be considered an ideal. It can correctly be charged, in fact, that some of the pharmacopeial drugs have not been studied along such lines. Admitting this, it is nevertheless regrettably true that many human lives have been sacrificed by the failure to meet the standards of these preliminary tests and that many more lives will be sacrificed if such standards are not put into effect. Any essential compromise with these requirements will inevitably exact a toll of deaths or injuries among the public. The life and safety of the individual should not be subordinated to the competitive system of drug exploitation.

The Elixir of Sulfanilamide catastrophe should once again serve as a warning to physicians who so readily prescribe unofficial drugs. There is no good reason why physicians should not have recourse to the simple expedient of prescribing only official or Council accepted preparations. By so doing they not only safeguard their patients but place their own influence solidly in favor of rationalized therapeutics. In addition, such a policy will tend to deemphasize the present enormous expenditures for advertising exploitation and tacitly direct drug manufacturers toward using their resources for the development of new and genuinely valuable agents in the treatment of disease. (Nonessential modifications of established drugs have no place in modern therapeutic practice.)

## CONCLUSION

The intelligent, energetic and cooperative manner in which the representatives of the American Medical Association, of the Food and Drug Administration of the U. S. Department of Agriculture and of cooperating educational institutions worked brought this episode to a speedy solution. Had it not been for their splendid service the toll of human life would probably have amounted to several hundreds.

21. Leake, C. D.: The Pharmacologic Evaluation of New Drugs, J. A. M. A. 93:1632 (Nov. 23) 1929.

22. Report of the Secretary of Agriculture on Deaths Due to Elixir of Sulfanilamide-Massengill: How the "Elixir" Was Produced, Document 124, 1937, p. 203.

## Special Article

### VITAMIN B<sub>1</sub>

#### METHODS OF ASSAY AND FOOD SOURCES

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*This article and others recently published or to be published comprise a new series on the present status of our knowledge of the vitamins. They have been prepared under the general auspices of the Council on Pharmacology and Chemistry and the Council on Foods. The opinions expressed are those of the authors and not necessarily the opinions of either council. Reprints are not available but the articles will be published later in book form.—Ed.*

The importance of vitamin B<sub>1</sub> in physiology and pathology has emphasized markedly the need of devising accurate methods for the quantitative determination of this substance in foods. Until recently the chemical identity of vitamin B<sub>1</sub> was unknown, rendering it impossible to develop chemical methods of analysis, and accordingly recourse was had to biologic methods of assay using rats and pigeons as test animals. Much information regarding the vitamin B<sub>1</sub> content of foods has been gained in this way, especially by the method in which the growth of rats was used as the measure of potency. This paper presents the technical aspects of various methods of bio-assay for vitamin B<sub>1</sub> from the point of view of quantitative interpretation of the results obtained and discusses briefly the chemical methods that are being developed. It concludes with an evaluation of foods as sources of the vitamin.

#### BIOLOGIC METHODS WITH PIGEONS

The first methods devised for the assay of vitamin B<sub>1</sub> were based on the prevention or cure of polyneuritis in pigeons.<sup>1</sup> There was also developed the weight maintenance method,<sup>2</sup> which involved the determination of the minimum amount of a substance required to maintain the weight of a standard bird on a polished rice diet. Because of many experimental difficulties, these methods are now used by only a limited number of investigators. The preventive method lacked specificity and the results were far too variable to admit of satisfactory quantitative analysis. The weight maintenance method raised the question of whether the antineuritic factor (vitamin B<sub>1</sub>) and the growth factor were identical.<sup>3</sup> Although the curative method has been used more extensively than the others, it has not proved to be more than fairly satisfactory owing to several major difficulties, such as irregularity of appearance of polyneuritis, the development of multiple deficiencies because of the inadequacy of the polished rice diet, development of nonspecific symptoms due to inanition, temporary and spontaneous remission of symptoms, failure of cures and variability in the time of response in different

birds. In this connection it is interesting to note that the prevention of polyneuritis in young chicks was recently suggested as a means of assaying for vitamin B<sub>1</sub>.<sup>4</sup>

The methods referred to are described in the literature in more or less final form and it seems unnecessary to present them in detail here. However, certain results obtained with the pigeon curative technic, more especially those concerned with the derivation of quantitative values, are or may be paralleled in the rat curative method which is now under investigation by the Committee of Revision of the U. S. Pharmacopeia. It seems advisable, therefore, to review briefly the results obtained with the pigeon curative technic on the basis of their experience value.

In the procedure with the pigeon curative technic there seem to be several items directly influencing the results obtained. The magnitude of the response of the birds to test doses of vitamin B<sub>1</sub>, for instance, is conditioned not only by the quantity of vitamin B<sub>1</sub> administered but also by such factors as the nature of the basal diet used, the duration of the initial depletion period and the duration of vitamin B<sub>1</sub> administration.<sup>5</sup> The method of administration of crystalline vitamin B<sub>1</sub> also affects the results in that the response to doses administered by injection is greater than the response to doses of the same size given orally.<sup>6</sup>

Several methods have been used or suggested for expressing the results of the assays quantitatively. In the very early tests, attempts were made to assess values by determining the minimum quantity (minimum curative dose) of the substance required to cure induced symptoms of polyneuritis. This procedure did not prove to be satisfactory because in practice it was not possible to define "minimum curative dose."<sup>7</sup> It soon became apparent also that the responses of different birds to like amounts of vitamin B<sub>1</sub> bearing material vary widely and that direct comparisons can be made only from successive tests with the same bird.

Further studies were then made to determine the relation between the size of the curative dose of vitamin B<sub>1</sub> administered and the duration of cure. Evidence was presented<sup>8</sup> to show that there is a direct quantitative relation between the dose and the duration of cure, i. e., the number of days of protection after cure before the onset of the next attack. In the application of this finding to the comparison of results with different substances, an attempt was made to reduce them to a comparable basis by expressing the relative potencies in terms of day doses per gram of material.<sup>9</sup> Values obtained from results with different dose levels of a given substance showed wide differences, however, and it was later concluded that this procedure is not a valid one.<sup>6</sup> The reason for this becomes clear when it is

1. Emmett, A. D., and Peacock, G. E.: Adequacy of Pigeons and Rats for Vitamin B Studies, *J. Biol. Chem.* **63**: xxiii (Feb.) 1923. Kinnersley, O'Brien and Peters.<sup>6</sup> Coward, Burn, Ling and Morgan.<sup>7</sup>

2. Seidell, Atherton: A Physiological Test for the Activity of Vitamin Preparations, *Pub. Health Rep.* **37**: 1519 (June 23) 1922. Plimmer, R. H. A.; Raymond, W. H., and Lowndes, John: Comparative Vitamin B<sub>1</sub> Values of Foodstuffs: Fruits and Vegetables, *Biochem. J.* **25**: 1788, 1931. Block, R. J.; Cowgill, G. R., and Klotz, B. H.: The Antineuritic Vitamin: I. The Method of Assay, Concentration of the Vitamin with Silver Under Various Conditions, and Its Solubility in Certain Organic Solvents, *J. Biol. Chem.* **94**: 765 (Jan.) 1932.

3. Smith, M. I.: A New Method of Evaluating the Potency of Antineuritic Concentrates, *Pub. Health Rep.* **45**: 116 (Jan. 17) 1930.

4. Arnold, Aaron, and Elvehjem, C. A.: Studies on the Vitamin B<sub>1</sub> Requirements of Growing Chicks, *J. Nutrition* **15**: 403 (April) 1937.

5. Carter, C. W., and O'Brien, J. R.: Maintenance Nutrition in the Pigeon: The Effect of Vitamin B<sub>1</sub>, *Biochem. J.* **31**: 2264 (Dec.) 1937. Waterman, R. E., and Ammerman, Marion: Studies of Crystalline Vitamin B<sub>1</sub>: VI. The Effect of Graduated Doses on Pigeons, *J. Nutrition* **10**: 161 (Aug.) 1935.

6. Kinnersley, H. W.; O'Brien, J. R., and Peters, R. A.: Crystalline Vitamin B<sub>1</sub>, *Biochem. J.* **29**: 701 (March) 1935.

7. Coward, K. H.; Burn, J. H.; Ling, H. W., and Morgan, B. G. E.: The Determination of the Antineuritic Vitamin, *Biochem. J.* **27**: 1719 (No. 5) 1933.

8. Kinnersley, H. W.; Peters, R. A., and Reader, Vera: Antineuritic Yeast Concentrates: III. The Curative Pigeon Test: A Critique, *Biochem. J.* **22**: 276 (No. 1) 1928.

9. Kinnersley, H. W.; Peters, R. A., and Reader, Vera: A Quantitative Comparison of the Curative Activity of Torulin (Vitamin B<sub>1</sub>) upon the Adult Pigeon and the Adult White Rat, *Biochem. J.* **24**: 1820 (No. 6) 1930.

recognized that the relation of the duration of cure to weight of material given is not represented by a straight line.<sup>7</sup> It has been shown, however, that it is possible to derive a curve of reference representing the relation of duration of cure to quantity of vitamin B<sub>1</sub> ingested that is valid for use in interpreting results obtained by the curative method.<sup>7</sup>

Other estimates from data obtained with the pigeon curative method have been made on the basis of percentage of birds cured<sup>7</sup> and the degree of accuracy in these values was shown to be as great as in those computed on the basis of duration of cure.

The chief points to consider in judging the worth of a biologic method are its specificity, its precision and its sensitivity. In the curative method, precision is contingent on the determination of the length of the curative period, which in turn depends on the determination of the time of onset of the symptoms of polyneuritis. Even if the symptoms indicating the onset of polyneuritis could be exactly described, frequent periodic observation during the entire twenty-four hours of a recorded day would be necessary to ascertain the exact time of onset. In most laboratories such complete observations are not possible and the recorded time of onset of symptoms at the beginning and at the end of the curative period may be considerably in error. Thus the value given as the duration of the cure may involve an error in recorded time, as well as errors arising from the use of birds given the curative dose at different stages of development of polyneuritis.

The sensitivity of the test is also not so great as might be hoped for. A tenfold increase in vitamin B<sub>1</sub> intake apparently extends the curative period from the minimum of two or three days to only six or seven days. It seems justifiable to say, therefore, that the method is seriously lacking both in preciseness and in sensitivity.

**Catatorulin Effect.**—During the course of studies in which pigeons were used to determine the potency of vitamin B<sub>1</sub> concentrates, it was observed that the oxygen uptake of brain tissue from avitaminous pigeons increased on the addition of concentrates of vitamin B<sub>1</sub> in lactate solution.<sup>10</sup> This was interpreted to be in the nature of a catalytic effect and the active factor was designated catatorulin although there was strong evidence that it was identical with vitamin B<sub>1</sub>. A technic was devised whereby the effect of the vitamin B<sub>1</sub> containing substance on the oxygen uptake of excised pigeon's brain was used as an index of the quantity of vitamin B<sub>1</sub> present.<sup>11</sup> The curve relating the dose of vitamin B<sub>1</sub> (micrograms to 3 cc. of solution) to oxygen uptake (milligrams per gram hourly), although not a straight line, was a smooth curve similar to the one relating vitamin B<sub>1</sub> intake to growth in rats. The catatorulin test has been suggested as a most promising one for comparing the potencies of vitamin B<sub>1</sub> containing substances, although further study is required to perfect the method.<sup>6</sup>

#### BIOLOGIC METHODS WITH RATS

**The Growth Test.**—The use of growth in the rat as a means of detecting the presence of vitamin B<sub>1</sub> in

substances was suggested as early as 1918. The method developed by Sherman and Spohn<sup>12</sup> and more especially the basal diet worked out by them was generally used up to the time when it was shown that for normal growth the rat requires in addition to vitamin B<sub>1</sub> a heat stable fraction remaining in autoclaved yeast. The Sherman and Spohn basal diet was then modified by Chase<sup>13</sup> to include sufficient autoclaved yeast so that vitamin B<sub>1</sub> was the first if not the only growth limiting factor.

The use of a preliminary depletion period was also suggested at this time as a precautionary measure even though it is generally agreed that vitamin B<sub>1</sub> is not stored in the body to any great extent and that animals given a vitamin B<sub>1</sub> free diet show only slight residual growth.

The procedure of the rat growth technic,<sup>14</sup> like that of any other method, is carried out more or less according to the tenets of the investigator who is using it. For the purpose of this discussion, however, it does not seem necessary to consider in detail the various conclusions and recommendations that have been made except so far as they have a direct bearing on the uniformity and reliability of the results obtained.

Essentially, the procedure consists in the keeping of healthy young rats of known lineage and within a given age and weight range on a diet devoid of vitamin B<sub>1</sub> but adequate in all other factors needed for growth. They are maintained on this diet without supplement either for a specified length of time considered sufficient for depletion or until there are evidences that their stores of vitamin B<sub>1</sub> have been depleted. The animals are then given daily (or six times a week) weighed quantities of the material under investigation during a test period of specified length. The gain in weight during this period is used as a measure of the quantity of vitamin B<sub>1</sub> present.

The reliability of the results from the rat growth method depends in large part on the selection and grouping of the experimental animals. The quantity of the standard material fed should be that which gives a growth response at or near the critical level, this being the gain in weight from which comparisons are to be made. In the Sherman-Chase method, for instance, the point corresponding to an average gain of 3 Gm. a week is used. This point is located in the steepest part of the curve relating gain in weight to dose of vitamin B<sub>1</sub> but far enough up on the curve so that all the experimental animals may be expected to survive. It is often the practice to administer the test material at three or more dose levels and the Standard of Reference material at one or more dose levels. The quantities of test material are so selected that one induces a growth response at or near the critical level, one above this and one below.

The animals to be given the several doses must be as nearly alike as possible. On identical quantities of vitamin B<sub>1</sub> the growth response of males is usually

12. Sherman, H. C., and Spohn, Adelaide: A Critical Investigation and an Application of the Rat Growth Method for the Study of Vitamin B<sub>1</sub>, *J. Am. Chem. Soc.* 45: 2719 (Nov.) 1923.

13. Chase, E. F., and Sherman, H. C.: A Quantitative Study of the Determination of the Antineuritic Vitamin B<sub>1</sub>, *J. Am. Chem. Soc.* 53: 3506 (Sept.) 1931.

14. British Pharmacopoeia, Biological Assay of Antineuritic Vitamin (Vitamin B<sub>1</sub>), 1932, p. 91. Chase and Sherman,<sup>13</sup> Coward, K. H.: The Biological Standardization of the Vitamins, London, Baillière, Tindall and Cox, 1938.

10. Passmore, Reginald; Peters, R. A., and Sinclair, H. M.: On Catatorulin: A New Method of Comparing the Oxidative Factor in Vitamin B<sub>1</sub> Concentrates, *Biochem. J.* 27: 842, 1933.

11. Peters, R. A.; Rydin, Hakan, and Thompson, R. H. S.: Brain Respiration, a Chain of Reactions, as Revealed by Experiments upon the Catatorulin Effect, *Biochem. J.* 29: 53 (No. 1) 1935. Passmore, Peters and Sinclair.<sup>10</sup>

greater than that of females.<sup>15</sup> Animals of different strain, or even litters of the same strain, may show differences in growth response for given quantities of vitamin B<sub>1</sub>.<sup>16</sup> For these reasons it is also recommended that the series of graded test doses and the dose of the standard be allotted to littermate animals of the same sex of about the same weight. Additional litters of animals are then used until the number of individuals on each dose level is sufficient to give an average result having an acceptable degree of reliability.

In the original Sherman and Spohn technic a test period of eight weeks was used. It was felt later, however, that results from a shorter period might more truly represent an uncomplicated vitamin B<sub>1</sub> effect, free from influence of other unknown growth essentials that might not have been supplied in the basal diet. Accordingly, a four weeks period was suggested.<sup>17</sup> Results from a test period of two weeks have been reported to be very nearly as good as those from one of three weeks' duration.<sup>18</sup> With a low rate of gain, results have been obtained on the basis of a ten day period,<sup>19</sup> although a somewhat longer period than this would seem to be generally more satisfactory.

At the completion of the test the gains in weight for the individual animals in each group are determined and the average gains in weight for the different groups are calculated. If the test material contained vitamin B<sub>1</sub> the gains in weight will be graded to the dose. With crystalline vitamin B<sub>1</sub>, for instance, growth has been shown to increase with doses as high as 160 micrograms per rat daily.<sup>20</sup>

From the results obtained a curve (curve of response or dose-effect curve) is drawn, relating gain in weight to quantity of material given. The smoothness of this curve will serve as an indication of the reliability of the test. The quantity of test material estimated to give the same effect, i. e. to have the same potency as the quantity of standard fed, is then derived from the curve of response, which is drawn to a suitable scale so that the degree of precision implied by the value derived is in accord with the values used in constructing the curve.

The degree of accuracy of vitamin B<sub>1</sub> estimated by the rat growth method has been studied statistically and is reported to be high for a method of this type.<sup>18</sup> The sensitivity also seems to be high, since it is possible to differentiate doses of crystalline vitamin B<sub>1</sub> differing in potency by only one microgram, although a dose of three micrograms must be administered before an appreciable growth response is obtained.<sup>21</sup>

**Refecation and Coprophagy.**—One of the more serious difficulties involved in the vitamin B<sub>1</sub> assay is that of eliminating the extraneous source of vitamin B<sub>1</sub> to which

the rat may have access as a result of "refecation."<sup>22</sup> There is ample evidence for believing that vitamin B<sub>1</sub> may be formed in the cecum probably as the result of bacterial action on the food residues there.<sup>23</sup> Refecation appears to be dependent on the starch component of the diet. Raw potato starch, for instance, has a high refective power, while rice, wheat and rye starches are reported to have little or none.<sup>24</sup> Cooking the starch seems to destroy its refective property.<sup>25</sup> The vitamin B<sub>1</sub> due to refecation is not absorbed from the lower intestinal tract, but the rat may obtain benefit of it by the simple expedient of consuming his feces. The use of cages with large mesh screen bottoms tends to lessen this tendency but does not necessarily eliminate it altogether. One consoling feature with regard to refecation is that it does not occur in all cases and a watchful observer can generally identify refected animals by the bulky character of the feces and a growth response not in accord with the known intake of vitamin B<sub>1</sub>.

**The Curative Technic.**—Polyneuritis in rats was reported as early as 1917 and in the following year a method for vitamin B<sub>1</sub> determination was described in which rats were kept on the vitamin B<sub>1</sub> free diet until they showed declining weight or symptoms of paralysis or both. Hofmeister<sup>26</sup> in 1922 was the first, however, to report the consistent appearance of polyneuritis in large numbers of rats. Several years later a comparison of results by the pigeon test and the rat curative test led to the conclusion that the same factor was measured with rats as with pigeons.<sup>9</sup> About the same time Sandels,<sup>27</sup> using a basal diet containing adequate amounts of the heat stable components, reported that polyneuritis occurred in rats only when small quantities of vitamin B<sub>1</sub> were present in the basal diet. This point has since been corroborated by other investigators.<sup>28</sup>

The first plausible plan for vitamin B<sub>1</sub> determination based on the curative technic with rats was that described by Smith.<sup>29</sup> Rats from 50 to 70 Gm. in weight and from 30 to 40 days of age developed symptoms of polyneuritis in from fifty to eighty days. Vitamin B<sub>1</sub> administered orally or by injection produced improvement in from three to five hours and a definitely curative effect in from eighteen to twenty-four hours. When the curative effect of a given dose had worn off the symptoms of polyneuritis recurred and were again alleviated

15. Sherman, H. C., and MacArthur, E. H.: A Quantitative Study of the Determination of Vitamin B<sub>1</sub>, *J. Biol. Chem.* **74**: 107 (July) 1927. Coward, Burn, Ling and Morgan.<sup>1</sup> Waterman and Ammerman.<sup>20</sup>

16. Light, R. F., and Cracas, L. J.: Vitamin B<sub>1</sub> Requirements of Different Strains of White Rats, *Science* **87**: 90 (Jan. 28) 1938.

17. Sherman, H. C., and Smith, S. L.: The Vitamins, New York, Chemical Catalog Company, 1931, p. 103.

18. Coward, K. H.: The Influence of the Length of the Test Period on the Accuracy Obtainable in a Vitamin B<sub>1</sub> Test, *Biochem. J.* **30**: 2012 (Nov.) 1936.

19. Schlutz, F. W., and Knott, E. M.: The Use of a Ten-Day Period for the Assay of Vitamin B by Rat Growth Technic, *J. Nutrition* **12**: 583 (Dec.) 1936.

20. Waterman, R. E., and Ammerman, Marion: Studies of Crystalline Vitamin B: V. The Effect of Graded Doses on Growing Rats, *J. Nutrition* **10**: 35 (July 10) 1935.

21. Unpublished data of Bureau of Home Economics, U. S. Department of Agriculture.

22. Steenbock, Harry; Sell, M. T., and Nelson, E. M.: Vitamin B: I. A Modified Technic in the Use of the Rat for Determination of Vitamin B, *J. Biol. Chem.* **55**: 399 (March) 1923. Dutcher, R. A., and Francis, Emma: Vitamin Studies: X. Feeding Technic in Vitamin Studies, *Proc. Soc. Exper. Biol. & Med.* **21**: 189 (Jan.) 1924. Fridericia, L. S.; Freudenthal, P.; Gudjonsson, S.; Johansen, G., and Schoubye, N.: Refecation, A Transmissible Change in the Intestinal Content, Enabling Rats to Grow and Thrive Without Vitamin B in the Food, *J. Hyg.* **27**: 70 (Nov.) 1927.

23. Guerrant, N. B.; Dutcher, R. A., and Tomey, L. F.: The Effect of the Type of Carbohydrate on the Synthesis of the B Vitamins in the Digestive Tract of the Rat, *J. Biol. Chem.* **110**: 233 (June) 1935. Griffith, W. H.: Studies on Growth: III. B and G Avitaminosis in Cecotomized Rats, *J. Nutrition* **10**: 667 (Dec.) 1935.

24. Kon, S. K.: Potato Starch and Refecation, *J. Hyg.* **31**: 543 (Oct.) 1931. Bliss, Sidney, with the technical assistance of Green, Fred: Refecation in the Rat: With an Appendix on Methods of Preparing Basic Materials for Deficient Diets, *J. Nutrition* **11**: 1 (Jan.) 1936.

25. Roscoe, M. H.: Spontaneous Cures in Rats Reared upon a Diet Devoid of Vitamin B and Antineuritic Vitamin, *J. Hyg.* **27**: 103 (Nov.) 1927.

26. Hofmeister, Franz: Studien über qualitative Unterernährung: II. Mitteilung der experimentelle Nachweis des Antineuritis, *Biochem. Ztschr.* **129**: 477, 1922.

27. Sandels, M. R.: Experimental Nutritional Polyneuritis in the Rat, *J. Nutrition* **2**: 409 (March) 1930.

28. Schrell, W. H., and Elvove, E.: Observations on the Assay of the Antineuritic Vitamin: Some of the Factors Involved in the Use of the Rat Method, *Pub. Health Rep.* **46**: 917 (April 17) 1931. Waterman and Ammerman.<sup>29</sup>

29. Smith, M. I.: A New Method of Evaluating the Potency of Antineuritic Concentrates, *Pub. Health Rep.* **45**: 116 (Jan. 17) 1930.

by a dose of the vitamin. It was suggested that the same animal might be used many times with little variation in its response to doses of equal potency. Although Smith found the curative effect proportional to the dose, the relationship was not considered quantitative and he made his comparisons, therefore, on the basis of the minimum curative dose. A cure lasting three days was considered the shortest remission period a minimum effective dose would bring about. The method was checked with a large number of substances and was considered to be entirely specific.

One particular advantage claimed for the foregoing method is the possibility of making comparative tests with the same animal, thus eliminating some of the errors due to differences in behavior of different test animals, a defect inherent in the rat-growth method. Several investigators working with the curative method have, however, reported considerable variation in the occurrence of polyneuritis and it is suggested that complete familiarity with the symptoms is essential before assay work is undertaken.<sup>30</sup> In this connection, criteria for judging the presence of polyneuritis have been described in detail and attention has been called to the fact that treatment of subsequent onsets may not always produce exactly the same result. The effect of such variation is reduced by the use of a sufficiently large number of animals.

To obtain greater uniformity in the occurrence of polyneuritis, the administration of known quantities of vitamin B<sub>1</sub> to each test animal has been recommended. Ammerman and Waterman,<sup>31</sup> for instance, suggest the daily injection of 0.5 microgram of crystalline vitamin B<sub>1</sub>. Dann<sup>32</sup> uses a diet containing 400 Gm. of brewers' yeast per hundred pounds, which she claims gives a higher incidence of polyneuritis than the diets used by Ammerman and Waterman or Smith. Recent work<sup>33</sup> seems to indicate that the fat content of the diet may be an important factor in vitamin B<sub>1</sub> tests in relation to the production of polyneuritis in rats. A low incidence of polyneuritis was found among rats on a high fat diet, which is in accord with other observations on the fat-sparing action of vitamin B<sub>1</sub>.

As already stated, studies for the purpose of selecting a suitable method for the assay of vitamin B<sub>1</sub> are at present being carried out under the direction of the Committee of Revision of the Pharmacopoeia of the United States of America. Only the rat curative technic is being considered because a previous survey had indicated this to be the preferred method of the four procedures to which consideration had been given. Of the several modifications of the rat curative technic under investigation it seems necessary, however, to consider only the one in use at present in the Vitamin Division of the Food and Drug Administration of the United States Department of Agriculture.<sup>34</sup> This procedure is based on the one used by Smith, differing from it primarily in the use of a more adequate diet

consisting of sucrose 61.25 per cent, casein 18.0 per cent, salt mixture 14.0 per cent, autoclaved yeast 4.0 per cent, autoclaved peanuts 10.0 per cent, purified liver extract 0.75 per cent, and cod liver oil 2.0 per cent.

Sources of all known components of the vitamin B complex, including vitamin B<sub>1</sub> and factor W of Elvehjem, are presumably present in this diet. Special purification of the casein and the use of sucrose in place of starch are also new features. Although a known source of the minimal quantity of vitamin B<sub>1</sub> considered to be essential for the production of polyneuritis is not included in this diet, 100 per cent occurrence of polyneuritis in rats weighing from 40 to 70 Gm. is claimed for it. Furthermore it has been demonstrated that, with this diet, polyneuritis can be produced and cured repeatedly in the same animal, the production of ten or more such periods in a single animal being quite usual.

The details of the test may be summarized briefly. The basal diet is given to litters of rats from 12 to 13 days of age, which are kept with their mothers in cages having raised screen bottoms. The young are weaned when they weigh between 40 and 50 Gm. and are weighed weekly until the twenty-fifth day. At the end of this period they are put in individual cages, weighed daily and observed for symptoms of polyneuritis, which are classified as slight, acute or severe. Only animals in the acute stage are used in an assay.

When an animal is judged ready for the test, 2 international units of vitamin B<sub>1</sub> are administered and the weight and condition of the animal are again noted daily. The time elapsing between the administration of the curative dose and the recurrence of polyneuritic symptoms is designated the curative period. At the second occurrence of acute polyneuritis, a dose of the test material is given and the length of the curative period is recorded as before. In Kline's experience 2 international units of vitamin B<sub>1</sub> gives a curative period of from seven to eleven days with animals ranging in weight from 40 to 70 Gm. at the time the curative dose is administered.

Results obtained in the assay of crystalline vitamin B<sub>1</sub> by this method show that the duration of cure following administration of vitamin B<sub>1</sub> increases with increasing dosage. For a considerable range the relationship is linear, although at higher levels the curve flattens off as do other dose-effect curves showing the behavior of animals to graded doses of a given vitamin. In successive periods with the same animal the length of the curative period for a given dose of crystalline vitamin B<sub>1</sub> was found to be uniformly reproducible to a remarkable degree. Thus it was considered possible to use the length of the curative period as an accurate measure of the vitamin B<sub>1</sub> administered in a test dose. Errors due to variation of animals are eliminated by using the results of successive trials with the same animal to compare the potency of the test material with that of the standard.

In an assay performed in this way a given quantity of the test substance is considered to contain at least 2 international units of vitamin B<sub>1</sub> if it promotes in the experimental animals a total curative period (the sum of the days of the curative period of each of the animals) equal to or greater than the total curative period following the feeding of an amount of the international standard equivalent to 2 units. "If it is desired to determine the exact potency of an unknown [test material], it is preferable to feed it to a few animals at

30. Heyroth, F. F.: The Evaluation of Vitamin B<sub>1</sub> Concentrates by the Rat Cure Method, *Bull. Basic Science Research* 4: 1, 1932.

31. Ammerman, Marion, and Waterman, R. E.: Studies of Crystalline Vitamin B: IV. Injection Method of Assay, *J. Nutrition* 10: 25 (July) 1935.

32. Dann, Elmantine P.: Vitamin B Assay Using Rat Curative Method with Modified Diets and Oral Administration of Addenda, *J. Nutrition* 12: 461 (Nov.) 1936.

33. McHenry, E. W.: An Effect of Choline on the Vitamin B<sub>1</sub> Sparing Action of Fats, *Biochem. J.* 31: 1616 (Sept.) 1937. Salmon, W. D., and Goodman, J. G.: Alleviation of Vitamin B Deficiency in the Rat by Certain Natural Fats and Synthetic Esters, *J. Nutrition* 13: 477 (May) 1937.

34. Kline, O. L.; Tolle, C. D., and Nelson, E. M.: Vitamin B<sub>1</sub> Assay by a Rat-Curative Procedure, *J. A. Off. Agric. Chem.* 21: 305 (May) 1938.



various levels to determine the approximate quantity which contains two international units of vitamin B<sub>1</sub>. The assay should then include successive feedings of the standard and unknown [test material] on at least eight animals." It is the opinion of the sponsor of this method that it is the most accurate procedure for vitamin B<sub>1</sub> determination that has been proposed.

Several measures other than duration of cure have been used for the quantitative expression of results from the rat curative technic. One of the first was weight recovery time,<sup>30</sup> i. e. the time required for the rat to return to the weight it showed when the injection of vitamin B<sub>1</sub> was made. Another measure used is the number of day doses per gram of material.<sup>9</sup> This value is derived in the same way as in the method with pigeons and is therefore subject to the same limitations.<sup>35</sup> Reference has already been made to the minimum curative dose used in the method described by Smith.<sup>29</sup> Although this measure is more logical than the determination of day doses it involves the same difficulties associated with the determination of the minimum curative dose for pigeons.

*The Bradycardia Method.*—In 1929 a condition of heart block and bradycardia preceding appearance of symptoms of polyneuritis or head retraction was reported in pigeons fed polished rice. The following year a condition of bradycardia in rats was described<sup>36</sup> which did not seem to be due to lowered food intake but rather to the effects of lack of vitamin B complex, since the condition did not occur in controls on a restricted food intake. It was cured by administration of vitamin B<sub>1</sub>. A special device for taking electrocardiograph records had been designed and the average normal heart rate for the rat was determined as from 500 to 530 per minute. Rats maintained on a vitamin B<sub>1</sub> free diet for about two weeks showed a gradual slowing of the heart rate, which finally reached a low level of 250-300 beats per minute. On the administration of vitamin B<sub>1</sub><sup>37</sup> the rate returned to normal and remained so for several days, when it began to fall again. The degree of recovery was "related" to the quantity of vitamin B<sub>1</sub> available.

Following this a method for the quantitative determination of vitamin B<sub>1</sub> based on the remission of bradycardia in rats was suggested.<sup>38</sup> In this method young rats weighing about 40 Gm. are given a vitamin B free diet and after about three weeks, or when loss of weight begins, electrocardiograms are taken. As soon as a heart rate of 350 beats per minute is recorded, the test sample is given and "dosing" is repeated until there is an increase in the rate. Thereafter, readings are taken every twenty-four hours until the heart rate has fallen again to the level recorded at the beginning. Both the increase in rate and the duration of the increased rate were found to be proportional to the dose administered. Cures of four days' duration are considered most satisfactory. Tests are made at several levels with from four to six animals at each level and a dose-effect curve is plotted. Comparisons are made to determine the quantities of the international standard that give the

same effect. An activated clay product, yeast, marmite and wheat germ, were assayed by the procedure described and also by the rat curative method, the rat growth method and the pigeon technic. The results by all four procedures agreed.<sup>38</sup>

The advantages claimed for the bradycardia method are a short preparatory period, ease and rapidity in obtaining results, and economy in test animals since one animal may be used for several tests. The sensitivity is considered to be only slightly less than that of the growth method. The investigators admit that the chief drawback to the general use of this method is the expense of the electrocardiograph. It has been used by Baker and Wright<sup>39</sup> for the assay of about a hundred different foods. With 20 and 30 mg. of the International Standard of Reference, the method was considered accurate to within  $\pm 20$  per cent. Cures giving responses of about 450 beats per minute tended to be prolonged or irregular. The responses to the first test doses tended to be abnormal and these results, therefore, were discarded. The values reported by these investigators are in general somewhat higher than values given for similar products by other investigators.

The original proponents of this method have made a thorough study of it in a determination of the potency of crystalline vitamin B<sub>1</sub> preparations and have also used it extensively and apparently successfully in studies of the urinary excretion of vitamin B<sub>1</sub>.<sup>40</sup> In the hands of others, however, it has not fared so well. Robertson and Doyle,<sup>41</sup> who attempted to use it in the assay of a crystalline vitamin B<sub>1</sub> preparation, observed considerable fluctuation in individual animals. A single tracing, for instance, showed a rate in one part that was forty beats per minute higher than the rate in another part, and two tracings from one rat showed differences of 100 beats per minute. Another rat on a curative dose of 6 micrograms showed rates varying from 326 to 480. R. S. Harris,<sup>42</sup> working with a cardiometer designed for the purpose, has found discrepancies of even greater magnitude in normal and in vitamin B<sub>1</sub> deficient rats.

#### QUANTITATIVE INTERPRETATION OF RESULTS BY THE BIOLOGIC METHODS

The variety of assay procedures described naturally makes one query concerning the quantitative interpretation of results. Those obtained in the early studies in which pigeons were used were interpreted either directly in terms of the curative dose, as already explained, or in relation to the potency of some other substance such as yeast assigned an arbitrary value, for example 1, 10 or 100. These data are difficult, if not impossible, to reconcile with values obtained by other methods and at most have little more than qualitative significance. It is probably safe to say that many of the data on the occurrence of vitamin B<sub>1</sub> obtained by the pigeon technic prior to the time of adoption of the international stand-

35. Heyroth, F. F.: The Use of Various Rat Assay Methods in Comparing Crystalline Vitamin B<sub>1</sub> Preparations, *Biochem. J.* **30**: 645 (April) 1936.

36. Drury, A. N.; Harris, L. J., and Maudsley, Cecil: Vitamin B Deficiency in the Rat: Bradycardia as a Distinctive Feature, *Biochem. J.* **24**: 1632 (No. 6) 1930.

37. An autolyzed yeast preparation (Marmite) was used.

38. Birch, T. W., and Harris, L. J.: Bradycardia in the Vitamin B<sub>1</sub> Deficient Rat and Its Use in Vitamin B<sub>1</sub> Determinations, *Biochem. J.* **28**: 602 (No. 2) 1934.

39. Baker, A. Z., and Wright, M. D.: The Vitamin B<sub>1</sub> Content of Foods, *Biochem. J.* **29**: 1802 (July) 1935.

40. Harris, L. J., and Leong, P. C.: Vitamins in Human Nutrition: The Excretion of Vitamin B<sub>1</sub> in Human Urine and Its Dependence on the Dietary Intake, *Lancet* **1**: 886 (April 18) 1936. Leong, P. C., and Harris, L. J.: Antineuritic Potency of Synthetic and Natural Crystalline Vitamin B<sub>1</sub> as Determined by the "Bradycardia" Method with a Statistical Study of the Degree of Accuracy of the "Bradycardia" Method, *Biochem. J.* **31**: 672 (April) 1937.

41. Robertson, E. C., and Doyle, M. E.: Difficulties in the Use of Bradycardia Method of Assaying Vitamin B<sub>1</sub>, *Proc. Soc. Exper. Biol. & Med.* **27**: 139 (Oct.) 1937.

42. Harris, R. S.: Personal communication to the author, from the Massachusetts Institute of Technology, Cambridge, Mass.

ards have not been quantitatively evaluated. This may in part account for the dearth of tabulated vitamin B<sub>1</sub> values.

Two units other than the international unit have been defined for the interpretation of data by the rat growth method. The first was the maintenance unit, which was defined<sup>43</sup> as that amount of vitamin B<sub>1</sub> which, when fed as a daily allowance, results in net maintenance of a standard rat over an eight weeks period under the conditions described. Although this unit was never used extensively and there are few data reported in terms of it, Cowgill has referred to it in his discussion of equivalents and for this reason it seems advisable to mention it here.

The large majority of values for the vitamin B<sub>1</sub> content of foods as well as for other substances has been expressed in terms of the growth unit. This is defined<sup>44</sup> as that amount of vitamin B<sub>1</sub> which, when fed daily under experimental conditions as described, induces in a standard test animal an average gain of 3 Gm. a week during the test period. Values expressed in this unit have been derived from results obtained with the Sherman-Spohn diet as well as the Sherman-Chase basal diet. The Sherman-Spohn diet did not contain a supply of vitamin G sufficient for growth, and values obtained with this diet therefore may or may not indicate the full vitamin B<sub>1</sub> value of the substance tested, depending on whether the basal diet and the test substance supplied sufficient vitamin G for growth. Roscoe<sup>45</sup> used a somewhat higher rate of gain, from 10 to 12 Gm. a week, for the growth unit.

The introduction of the international standards has given a more precise method of expressing vitamin values than was possible before these standards became available. There is evidence, however, that estimates made in terms of international units are not always as precise as they might have been. The derivation of values by the use of standards of reference by any method of analysis involves the determination of quantities of standard and of test material that give the same effect. The accuracy of the assay depends on the closeness of this determination. Many investigators use the method of trial tests to determine the quantity of test material equivalent to a given quantity of standard. With the wide variations inherent in results obtained by biologic methods a close match is obtained only if great care is taken in carrying out the assay; and, even when such results seem to have been obtained, the reliability is even more difficult to check. A perusal of published data indicates that in this procedure more attention should be given to the adoption of criteria for determining the limits within which the two effects may be considered to be identical. Other investigators may use a dose effect curve, as described under the growth method with rats, from which the quantity of test material equivalent to the quantity of standard used may be estimated if the results of the assay do not give it directly. Such curves may involve large errors of estimate, however, unless consideration is given to factors giving rise to variation in results with different test subjects.

The recently completed assay of the crystalline vitamin B<sub>1</sub> hydrochloride proposed for international standard to replace the adsorbate now in use indicates that vitamin B<sub>1</sub> values for substances assayed against the international standard adsorbate vary according to the method of assay used. Values obtained by the curative technics, for instance, were considerably higher than values by the prophylactic or growth method. It is suggested that in sick animals such as those used in the curative method there is incomplete elution of vitamin B<sub>1</sub> from the adsorbate in the alimentary canal. It has been shown<sup>46</sup> that rats seriously depleted of vitamin B<sub>1</sub> cannot fully utilize the vitamin B<sub>1</sub> present in preparations such as fullers' earth adsorbates. In the curative method, therefore, the response to the international standard adsorbate does not represent the full vitamin B<sub>1</sub> activity of the dose given and the vitamin B<sub>1</sub> potency of the test substance determined by this method is accordingly judged to be higher than it really is. In the growth method, on the other hand, the animals are healthy and seem to utilize fully the vitamin B<sub>1</sub> of the standard adsorbate. Vitamin B<sub>1</sub> values by the growth method are therefore probably more nearly true values although considerably lower than those obtained by the curative technics.

Whether this same relationship holds for natural products depends on the availability of vitamin B<sub>1</sub> in these products.

Since the adoption of the international standards, attempts have been made to derive a factor for converting vitamin B<sub>1</sub> values expressed in Sherman units to equivalent values in international units. Values from 1 to 4 Sherman units equivalent to 1 international unit have been suggested. As explained in an earlier paper of this series,<sup>47</sup> the growth units have no fixed value in terms of the vitamin for which they are defined and therefore conversion factors cannot be derived accurately.

Many food products present a difficulty in vitamin B<sub>1</sub> assays not experienced so generally in the case of other vitamins. Although vitamin B<sub>1</sub> occurs in a wide variety of foods, the quantity present in most cases is small. This means that the test doses used in the biologic assays must be rather large and it is often difficult, if not well nigh impossible, to get the animals to consume enough of the allotted portions to make the test reliable. Furthermore, it may not be possible to obtain responses that are divergent enough to indicate the dose effect relation essential to the derivation of a true estimate of the potency of the test material.

The foregoing discussion is intended to imply that vitamin B<sub>1</sub> values that have been reported, especially those of unusual magnitude, should not be accepted categorically apart from a consideration of the method of assay used and the exactitude with which the values were derived from the results obtained. When using tabulated values expressed in international units it is advisable to scrutinize them carefully to ascertain whether they were determined experimentally in international units or were derived by the use of a conversion factor from values determined in terms of some other unit.

43. Sherman, H. C.: *Chemistry of Food and Nutrition*, ed. 3, New York, Macmillan Company, 1926, p. 406.

44. Sherman, H. C.: *Chemistry of Food and Nutrition*, ed. 5, New York, Macmillan Company, 1937, p. 393.

45. Roscoe, M. H.: *The Distribution of the Vitamin B Complex: I. Leafy Vegetables*, *Biochem. J.* 2:4: 1754 (No. 6) 1930.

46. Keresztesy, J. C., and Sampson, W. L.: *Utilization of Vitamin B<sub>1</sub> from Fuller's Earth Adsorbates*, *Proc. Soc. Exper. Biol. & Med.* 36: 686 (June) 1937.

47. Munsell, Hazel E.: *Vitamin A: Methods of Assay and Food Sources*, *J. A. M. A.* 111: 245 (July 16) 1938.

## CHEMICAL METHODS OF ANALYSIS

Although several chemical methods of analysis have been suggested for the determination of vitamin B<sub>1</sub>, the thiochrome method is the only one that has been studied to any great extent. Early in 1935 Peters<sup>48</sup> reported that the purest preparations of vitamin B<sub>1</sub> available were converted by oxidation in aqueous solution into substances showing intense sky-blue fluorescence. Somewhat later, Barger, Bergel and Todd<sup>49</sup> succeeded in transforming vitamin B<sub>1</sub> into a pale yellow sulfur-containing compound by oxidizing it in alkaline solution with potassium ferricyanide. The compound formed showed an intense blue fluorescence in neutral or alkaline solution and had all the properties of the thiochrome described by Kuhn and his associates.<sup>50</sup> Jansen<sup>51</sup> studied the quantitative transformation of thiamin to thiochrome and concluded that the reaction took place at an optimal  $p_H$  of 10 and the maximum reaction in one or two minutes. Excess potassium ferricyanide seemed to destroy the thiochrome. The thiochrome was then extracted with isobutanol and the extract transferred to a Cohen fluorimeter. The test with the international standard was made by eluting the vitamin with a mixture of alkali and potassium ferricyanide. The procedure of alkali extraction was later adopted for removing the vitamin from other materials. Westenbrink and Goudsmit<sup>52</sup> applied the method of Jansen to the determination of vitamin B<sub>1</sub> in urine samples. The urine was diluted with three volumes of water and the reaction was carried out in an atmosphere of nitrogen. Errors due to interfering fluorescent substances were eliminated by "subtracting the fluorescence of a franconite eluate to which no potassium ferricyanide had been added from the fluorescence of some eluates which had been treated with different amounts of this oxidizing agent." Results by this technique agreed well with those obtained by Harris and Leong using the bradycardia method. Pyke<sup>53</sup> made a rather extensive study of the method as applied to the determination of vitamin B<sub>1</sub> in foods. The report covering this study gives a detailed description of the procedure, in which fluorescence was measured by a Cohen fluorimeter. Compensation for variation in intensity of the fluorimeter was obtained by reading the deflexion given by 10 cc. of solution containing 0.81 mg. of quinine sulfate in 100 cc. of tenth normal sulfuric acid. Readings from solutions of thiochrome were calculated back on the basis of 100 for this deflection. With the pure vitamin the fluorimeter readings and the concentrations of vitamin showed a straight line relationship. In the procedure as finally adopted the fluorescence given by a solution to which no potassium ferricyanide had been added was subtracted from the fluorescence of the treated solution to get that due to thiochrome.

Karrer and Kubli<sup>54</sup> also give a detailed description of the thiochrome reaction. These investigators feel that the violet fluorescence of thiochrome can be estimated more advantageously by the eye than by a photoelectric fluorimeter. Hennessy and Cerecedo<sup>55</sup> report success in the elimination of nonspecific fluorescence by employing synthetic zeolites for absorbing the vitamin.

Several other tests suggested for vitamin B<sub>1</sub> also depend on the formation of colored compounds. Prebluda and McCollum<sup>56</sup> described a purplish red compound formed with vitamin B<sub>1</sub> and *p*-amino acetanilid or methyl-*p*-amino phenyl ketone treated with nitrous acid which was stable and highly insoluble in water. Naimans<sup>57</sup> found that with vitamin B<sub>1</sub> containing substances bismuth potassium iodide gives an orange red precipitate which can be filtered, dried and weighed. This reaction is specific for the thiazole nucleus and the weight of the precipitate is proportional to the quantity of vitamin B<sub>1</sub> present.

In 1926 Jansen and Donath claimed a strong Pauly reaction (red color when treated with diazotized sulfanilic acid in the presence of sodium carbonate) for crystalline preparations of vitamin B<sub>1</sub>. This reaction was studied by Kinnorsley and Peters,<sup>58</sup> who found that it was stabilized by the addition of formaldehyde. These investigators felt, however, that the specificity of the reaction needed further proof.

## FOOD SOURCES

Vitamin B<sub>1</sub> has been shown to be present in a wide variety of foods, but there are few foods of plant or of animal origin that may be considered potent sources of this factor. In planning adequate diets, therefore, it is necessary to depend on several food items to furnish the day's supply of vitamin B<sub>1</sub>. This is in direct contrast to experience with vitamin A and vitamin C, in which a single food may furnish the major portion of the requirement for the day. The problem of planning for vitamin B<sub>1</sub> is further complicated by the fact that it is desirable to insure an adequate supply in the diet each day, since vitamin B<sub>1</sub> is not stored in the body to any great extent. These considerations become more significant when viewed in the light of the current tendency to give more attention to the subacute and chronic forms of the deficiency diseases.

At the present time dietary calculations for vitamin B<sub>1</sub> are made difficult by the dearth of data on the occurrence of this factor in foods, as well as by the further fact that values expressed in terms of the rat growth unit still comprise the major portion of those available. It is to be hoped that the development of new methods of assay that are more specific and more precise will furnish the incentive for more extensive studies giving values in international units. Tables of numerical values are given in several textbooks, and a summary of data that appeared in the literature up to January 1936 will be found in a publication recently issued by the United States Department of Agriculture.<sup>59</sup> It seems

48. Peters, R. A.: Vitamin B<sub>1</sub> and Blue Fluorescent Compounds, *Nature* **135**: 107 (Jan. 19) 1935.

49. Barger, G.; Bergel, F., and Todd, A. R.: A Crystalline Fluorescent Dehydrogenation Product from Vitamin B<sub>1</sub>, *Nature* **136**: 259 (Aug. 17) 1935.

50. Kuhn, Richard; Wagner-Jauregg, Theodor; Van Klaveren, F. W., and Vetter, Hellmuth: Ueber einen gelben, schroefelhaltigen Farbstoff aus Hefe, *Ztschr. f. physiol. Chem.* **234**: 196, 1935.

51. Jansen, B. C. P.: A Chemical Determination of Aneurin (Vitamin B<sub>1</sub>) by the Thiochrome Reaction, *Rec. trav. chim.* **55**: 1046, 1936.

52. Goudsmit, J., and Westenbrink, H. G. K.: Determination of Aneurin (Vitamin B<sub>1</sub>) in Urine by the Thiochrome Method, *Nature* **139**: 1108 (June 26) 1937. Westenbrink, H. G. K., and Goudsmit, J.: The Determination of Aneurin (Vitamin B<sub>1</sub>) in Urine by the Thiochrome Reaction, *Rec. trav. chim.* **56**: 803, 1937.

53. Pyke, M. A.: The Chemical Measurement of Vitamin B<sub>1</sub> in Foodstuffs and Biological Material by Means of the Thiochrome Reaction, *Biochem. J.* **31**: 1958 (Nov.) 1937.

54. Karrer, Walter, and Kubli, Ulrich: Zur Bestimmung von Vitamin B<sub>1</sub> (Aneurin), *Helv. chim. acta* **20**: 369, 1937.

55. Hennessy, D. J., and Cerecedo, L. R.: The Use of Synthetic Zeolites in the Estimation of Vitamin B<sub>1</sub> by the Thiochrome Reaction, read before Division of Biological Chemistry, American Chemical Society, Dallas, Texas, during 1938.

56. Prebluda, H. J., and McCollum, E. V.: A Chemical Reagent for the Detection and Estimation of Vitamin B<sub>1</sub>, *Science* **84**: 488, 1936.

57. Naimans, Barnett: A Reagent for Vitamin B<sub>1</sub>, *Science* **85**: 290 (March 19) 1937.

58. Kinnorsley, H. W., and Peters, R. A.: The Formaldehyde-Azo Test for Vitamin B<sub>1</sub>, *Biochem. J.* **28**: 667 (No. 2) 1934.

59. Daniel, E. P., and Munsell, H. E.: Vitamin Content of Foods, Miscellaneous Publication 275, U. S. Department of Agriculture.

unnecessary, therefore, to consider here more than the general aspects of food sources of vitamin B<sub>1</sub> with particular reference to the precautionary measures essential to insure against unnecessary losses during manipulative procedures, such as cooking or canning.

Vegetables, including potatoes, may be regarded as forming one of the more important groups to be depended on regularly for vitamin B<sub>1</sub>. Exclusive of legumes they may be considered for general purposes on a par with one another, since they do not show differences among themselves that make it feasible to group them for relative B<sub>1</sub> content on the basis of any particular physical characteristic such as color, for instance. Although fruits may be rated as only fair sources of vitamin B<sub>1</sub>, they are important in that they are generally eaten raw and in relatively large quantities, if used at all.

Vitamin B<sub>1</sub> tends to be concentrated in the germ portion and outer or bran layer of seeds. Legumes, nuts and whole grains are among the good food sources. Refined cereals and flours, however, contain very little of the vitamin because the germ and the bran layer are largely removed during the refining process.

Eggs, muscle meats and, more especially, the organ meats are rated as good sources. These products are not subject to variation due to changes in the vitamin B<sub>1</sub> content of the diet of the animals from which they are derived, as is the case with vitamin A. Certain muscle meats, specifically chicken and pork, have been described as rather unusual sources when compared with other similar products. Whether this is actually the case or only an accident of assay should perhaps be left for further investigation.

Milk becomes an important source of vitamin B<sub>1</sub> when considered on the basis of the quantity usually consumed and the fact that it may be used without treatment that would tend to lessen its potency.

The foregoing statements should be taken as applying to untreated or fresh forms of the products described. They do not cover foods that have been subjected to any of the various manipulative procedures concerned in preserving the food or preparing it for consumption. Vitamin B<sub>1</sub> is inactivated by heat in the presence of moisture, but in foods at least it is not readily destroyed through oxidation.

The actual loss of vitamin B<sub>1</sub> during the heat treatment of food may or may not be significant, depending on the conditions that prevail. Under most conditions inactivation occurs gradually as the time or temperature, or both, of heating increases. For general purposes this need not be considered significant up to one hour at 100 C. The acidity (or alkalinity) of the medium, however, has a significant influence on the rate of destruction, since inactivation increases with decreasing acidity, especially at temperatures above the boiling point of water. Inactivation of vitamin B<sub>1</sub> in milk powder during dry heating in air at 100 C. for as long as forty-eight hours has been reported as small. Recent experience<sup>60</sup> indicates, however, that losses in foods under conditions comparable to those in baking may be as high as 50 per cent.

Although vitamin B<sub>1</sub> is not readily destroyed at the temperature of boiling water, the greatest loss due to cooking may take place in foods that are boiled. Vita-

min B<sub>1</sub> is very soluble in water and it is easily conceivable that a large proportion of the vitamin may go into solution in the cooking water and be lost. Unless this liquid is served in some way to the person eating the food, the food itself should be held a questionable source of vitamin B<sub>1</sub>, even though in the untreated form it is rated as a good source. This illustrates a cardinal point that unfortunately is often overlooked, namely that it is not the inclusion of a food item in the diet that is important but its actual nutritive value when consumed.

During canning of foods there is probably little loss of vitamin B<sub>1</sub> due to processing per se. Any loss noted in such products probably took place during the preparation of the food prior to the time it was put in the can. The full vitamin B<sub>1</sub> value of canned products is obtained only if no portion of the contents is discarded.

Too few data are available on the effect of storage on the vitamin B<sub>1</sub> in foods to admit of any definite generalization in this regard. There is little reason for believing, however, that there is any significant loss of vitamin B<sub>1</sub> under storage conditions that preserve the food satisfactorily for consumption. Information on the effect of drying is also scanty. The foods that have been assayed in the dried state were, for the most part, dried to reduce the bulk of the sample so that the experimental animal would consume the portion allotted. The material was dried under conditions assumed to effect no loss of vitamin B<sub>1</sub>. This was only an assumption, however, since check tests could not be made on comparable samples of the fresh product. Results of assays carried out in this way have little significance, therefore, in relation to the vitamin B<sub>1</sub> content of the fresh product. Milk may be cited as an exception, since studies designed to determine losses of vitamin B<sub>1</sub> during procedures used to reduce the water content have been made on comparable samples of the fresh and dehydrated or partially dehydrated product. Losses during evaporation and drying were shown to be small.

Freezing seems to be a satisfactory method of preserving the maximum nutritive value of foods and there is reason to believe that vitamin B<sub>1</sub> is preserved in stored frozen foods, as well as are the other vitamins. When frozen foods are cooked, it is essential to remember that the vitamin may be more easily extracted from these than it is from the fresh product, and that care must be taken to serve all expressed juices.

Although it is permissible to claim that the ordinary diet may easily contain adequate supplies of vitamin B<sub>1</sub>, it seems advisable to suggest that there is an almost equal opportunity for it to be low in this factor. The tendency to replace whole grain products by refined cereals and flour may entirely eliminate this important source for many individuals. Vegetables are often cooked with little or no regard for loss of vitamin B<sub>1</sub> value or, for that matter, nutrients of any sort. These two indiscretions alone eliminate two of the chief sources of this vitamin. Fruits, meat, milk and eggs, which constitute good sources of vitamin B<sub>1</sub>, are among the high cost foods and are the first to be omitted in the low cost diet. With these considerations in mind it would seem to be expedient to give more attention to the vitamin B<sub>1</sub> supply especially in certain types of diets and to the possible ill effects that may result from the long-continued use of a diet low in this nutritionally important factor.

60. Unpublished data, Bureau of Home Economics, U. S. Department of Agriculture.

## Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS. HOWARD A. CARTER, Secretary.

### ILLE PORTABLE UNDERWATER THERAPY TANK ACCEPTABLE

Manufacturer: Ille Electric Corporation, 386 Fourth Avenue, New York.

The Ille Portable Underwater Therapy Tank with Hydro-Massage is essentially a portable whirlpool bath recommended for heat treatment of legs and arms. It is designed for use in hospitals or offices. The complete equipment includes an extra wide stainless steel tank with an adjustable canvas seat, turbine agitator, immersion heater with dial thermometer and pump, all electrically operated, and filling hose, an arm rest, and optional metal chair on high frame for use in leg treatments. The tank rests on a heavy metal base mounted on four solid rubber casters for ease in moving from place to place. Total shipping weight is approximately 350 pounds or 325 pounds without chair. Inside dimensions are 28 inches high by 16 inches wide by 36 inches long. It operates on alternating current. Special equipment is required for direct current.



Ille Portable Underwater Therapy Tank.

It is filled with water by means of a hose which fits over any available standard faucet. Once filled, the tub may be trundled wherever the operator desires. The water is agitated and aerated by an electric turbine type of pump. The water is maintained at the desired temperature level by the immersion heater (1,000 watt consumption). The dial thermometer permits continuous reading of the temperature.

The agitator produces a gentle hydromassage, which is applied most effectively by placing the underwater jet next to the affected part. A gear device and crank enable the operator to move the agitator up and down within the tub and to increase or decrease the velocity of the ejection. The motor driven agitator may be attached to a full size tank large enough to permit the patient to lie at full length. Such tanks may be purchased from the manufacturer.

There is an electric pump for draining the tank. A valve connected to the lower part of the drain pipe permits complete drainage of residue.

This unit was investigated clinically and found to produce therapeutic effects not unlike those produced by other whirlpool baths. Mechanically it appears to be a well made piece of equipment.

In view of the foregoing report, the Council on Physical Therapy voted to accept the Ille Portable Underwater Therapy Tank for inclusion in its list of accepted apparatus.

### ADLANCO W-73 TWO-TUBE ULTRATHERM NOT ACCEPTABLE

Manufacturer: Adlanco X-Ray Corporation, 54 Lafayette Street, New York.

The Adlanco W-73 Ultratherm is intended solely for medical use. It is similar to the Council accepted Model G Ultratherm (THE JOURNAL, Nov. 14, 1936, p. 1636) except for a certain difference in wiring owing to the use of two tubes in place of one. The cabinet model may be procured with a walnut finish or a white painted exterior. Glass insulated electrodes are attached to the machine by rigid electrode arms with movable joints.

The unit contains two vacuum tubes, rated at 250 watts each. Its circuit is of the push-pull type. There are two transformers—one high tension, supplying current to the anodes, and one low tension, supplying current to the filaments of the tubes. The high tension current is controlled by a five step switch.

The filament current is controlled by a three step switch, supplying power with a voltage subject to local variations.

The output was measured by a lamp load, photoelectric cell and wattmeter. Six carbon filament lamps, each with 100 watt capacity, were connected in parallel and the maximum power output was determined to be 495 watts. The line electromotive force was 111 volts. Input power under these conditions was 1,460 watts.

The transformer temperature rise, taken after a two hour run at full load, was within the limits of safety. Burns may be procured with this unit but may be avoided by employing ordinary precautions. Provision has been made to eliminate radio interference by insertion of line filters.

The unit was investigated in a clinic acceptable to the Council and rendered satisfactory service. It appears to be as efficient as the average device of this type. No evidence was submitted by the firm to substantiate the efficacy of the unit in heating the deep muscle tissues of the living human thigh, although such information was requested and ample time given to obtain these data.

Since the firm has not fulfilled the requirements for acceptance and has circulated advertising matter which contains misleading, unwarranted or exaggerated statements, the Council voted not to accept the Adlanco W-73 Two-Tube Ultratherm for inclusion in its list of accepted devices. However, the Council will give the unit reconsideration without prejudice when the requirements and the Official Rules have been met.

## Council on Foods

### ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION AND WILL BE LISTED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED.

FRANKLIN C. BING, Secretary.

### MRS. PALEY'S BABY FOOD—STRAINED GREEN BEANS

Manufacturer.—Paley-Sachs Food Company, Houston, Texas.

Description.—Canned, cooked sieved beans slightly seasoned with salt.

Manufacture.—Fresh green beans are thoroughly washed, trimmed, pressure cooked, sieved, filled into glass jars, vacuum sealed and heat processed.

Analysis (submitted by manufacturer).—Moisture 92.2%, total solids 7.7%, ash 0.5%, fat (ether extract) 1.1%, protein (N  $\times$  6.25) 1.4%, reducing sugars as dextrose 1.4%, crude fiber 0.5%, total carbohydrates other than crude fiber (by difference) 4.4%, calcium (Ca) 0.040%, phosphorus (P) 0.028%, iron (Fe) 0.002%.

Calories.—0.3 per gram; 9 per ounce.

### NUTRADIET BRAND UNDILUTED GRAPEFRUIT JUICE

Distributor.—The Nutradiet Company, a subsidiary of S & W Fine Foods, Inc., San Francisco.

Description.—Canned Florida grapefruit juice packed without added sugar.

Manufacture.—Tree-ripened grapefruit is mechanically cleaned and washed, cut in halves and reamed. The juice is strained, automatically filled into cans, vacuum sealed and processed at 71 C. for five minutes.

Analysis (submitted by manufacturer).—Moisture 87.7%, total solids 12.3%, ash 0.4%, fat (ether extract) 0.06%, protein (N  $\times$  6.25) 0.6%, crude fiber 0.03%, carbohydrates other than crude fiber (by difference) 9.5%, titratable acidity as citric acid 1.7%, vitamin C (dye titration) 0.48 mg. per gram.

Calories.—0.41 per gram; 12 per ounce.

Vitamins.—Approximately 275 international units of vitamin C per ounce.



# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, SEPTEMBER 3, 1938

## SPECIAL SESSION OF THE HOUSE OF DELEGATES TO CONSIDER NATIONAL HEALTH PROGRAM

The House of Delegates is the only body authorized under the Constitution and By-Laws of the American Medical Association to establish policies for the organization. Contrary to general belief, neither the Board of Trustees, the president nor any of the other officers or employees of the Association can establish a policy or point of view for the Association. It is their duty, once policies have been established by the House of Delegates, to promote and enforce them.

Ordinarily the House of Delegates meets once each year at the time of the annual session; the policies there promulgated become effective and remain effective until changed at a later session. To maintain the flexibility of the organization, however, the By-Laws provide that a special session of the House of Delegates may be held in response to a call issued by the speaker of the House whenever a sufficient number of members of the House of Delegates or of the Board of Trustees deem such a special session necessary. Some years ago when the Social Security Act was under consideration a special session of the House of Delegates was called to consider the part to be played by the American medical profession in this legislation. Now the Association is confronted with a national health program of tremendous scope and with the statement that it is the intention of the federal administration to make this program effective by legislation to be introduced at the next session of the Congress.

The Board of Trustees, having given this matter serious consideration, determined to request the speaker of the House of Delegates, Dr. H. H. Shoulders, to issue a call for the convening of a special session of the House of Delegates for this purpose. This call has been issued and the meeting will take place in Chicago on

September 16. According to the announcement of the speaker:

The business to be transacted at this special session shall be limited to the consideration of the national health program submitted to the National Health Conference recently held in Washington and to such other matters as may be submitted to the House of Delegates by the Board of Trustees.

The American Medical Association is among the most democratic organizations in the world today. Members of the House of Delegates are chosen by the houses of delegates of the individual state and territorial medical societies and these, in turn, are composed of delegates sent by the individual county medical societies. Such policies as the House may establish will become the official policies of the Association, to be urged on the medical profession, on the government and on the public generally as the House of Delegates may direct. Members of the American Medical Association will do well to follow closely the deliberations of this special session. Once the House of Delegates has spoken, its actions should be supported by the united voice of American medicine, so that it may be heard with respect and consideration when legislation comes before the Congress of our country.

## THE EXPANDING INTEREST IN INDUSTRIAL HEALTH

Industrial health as a field of special medical interest is young. Its origin, first strivings and subsequent development are well within the memory of many physicians today. Indeed, many pioneers who early foresaw the notable contributions which medicine could make toward improving the physical and environmental welfare of American industrial employees are active today. Except by a devoted few, little serious attention was given to safe and healthful practices in industry thirty years ago. Few physicians realized the preventable character of most occupational disorders. By 1910, however, the preliminary investigations of the principle of compensation for industrial injuries had prepared the way for implementing the recommendations of the fact-finding commissions. The subsequent rapid and widespread adoption of compensation legislation by the states began to exert a profound influence on medical thought and practice. The forward-looking element in industry and in the medical profession recognized that a health and safety program, as adequate as possible within the limits of time and available personnel, was a necessity not from motives of altruism but as sound business practice.

Demands on the medical profession in the field of industrial health have continued increasingly. The interest which was formerly concentrated on traumatic and reconstructive surgery has expanded immeasurably.

At present there is scarcely a field of medical practice which has not been affected by problems of industrial health or has not contributed toward their solution. The strictly preventive medical aspects have long been preeminent in the scientific attack on occupational hazards. The achievements of the Division of Industrial Hygiene and Sanitation of the United States Public Health Service over the past twenty-five years have recently resulted in the establishment of similar agencies in the health departments of many states and some cities. In 1915 the Section on Preventive Medicine and Public Health of the American Medical Association conducted a symposium on industrial sanitation; in every succeeding meeting similar material has been presented.

Realization of the expansion of interest in industrial medicine led the House of Delegates of the American Medical Association to create the Council on Industrial Health. Correspondence on specific professional problems in industrial medicine has steadily increased and the space which has been assigned to this subject in *THE JOURNAL* has become greater and greater. Indeed, all the councils and bureaus of the Association are cooperating in the aid of physicians who need assistance in meeting the problems of adequate industrial medical care.

The record of achievement is gratifying to all who have contributed toward the elevation of standards and practice in industrial health. As in the case of workmen's compensation, the solution of some problems has only served to demonstrate the presence of others. The necessity for continued concentration on and devotion to the contribution which medicine can make to minimize the ill effects which occupation and working conditions may have on the health and well-being of the individual worker is apparent.

#### METAPLASTIC IMMUNITY

According to MacNider<sup>1</sup> of the University of North Carolina, there are variations in the resistance of individual tissue cells to toxic agents. As a result of this variation less resistant cells are killed by the properly graded dose of toxins, selective hypertrophy or regeneration of the relatively resistant remaining cells rendering the organ or tissue relatively immune to this toxin. His earliest demonstration of this "metaplastic" immunity was a study of acquired uranium tolerance in the kidneys. Following the subcutaneous injection of 2 mg. of uranium nitrate per kilogram of body weight, acute nephritis invariably develops in normal dogs. The kidneys of these dogs show degenerative changes, particularly in the tubular epithelium. A second injection of uranium nitrate made before full functional recovery

invariably increases the severity of this epithelial degeneration. If the second injection is delayed, however, till the animals have established complete functional regeneration, it is usually found that the dogs are relatively immune to uranium nitrate, 4 mg. per kilogram of body weight producing no nephrotoxic symptoms. A similar acquired tolerance to uranium in the kidney was subsequently demonstrated in rabbits.

Histologic studies of the kidney immune to uranium show a "metaplastic" repair, replacement of the lost tubular epithelium with cells of a syncytial type. This regeneration can be conveniently classified as a survival and regeneration of the "fittest" or "metaplasia," although the latter word is open to criticism.

Following his initial demonstration of metaplastic immunity in the kidneys, MacNider demonstrated similar syncytial regenerations in the liver. Following the subcutaneous injection of a dose of uranic nitrate sufficient to cause metaplastic regeneration, the animals acquired a tolerance to uranium accompanied by a tolerance to various other hepatotoxic agents, including chloroform. Studies of dogs in which this syncytial type of hepatic regeneration had been produced many months previously showed that the acquired hepatotoxic tolerance can persist for at least four years. Focal reversions of the liver cells to the earlier chloroform susceptible types, however, were occasionally demonstrable.

That metaplastic regeneration actually takes place in animals maintained under normal conditions is shown by MacNider's study of eighteen senile dogs. Thirteen of these dogs showed a normal liver function as far as could be determined by the phenoltetrachlorophthalein test. These animals, however, were completely resistant to a normally necrotizing dose of chloroform. Histologic study showed numerous syncytial cells in the liver.

Thus far, immunologic theorists have shown but slight interest in MacNider's concept because his work has been limited to highly specialized parenchymatous tissues. If a similar selective regeneration can be shown to be operative in the spleen, bone marrow and other parts of the reticulo-endothelial system, however, his metaplastic theory may form the basis for some future theory of specific antibody production. Recent studies of *in vitro* production of specific antibodies by splenic fragments seem to be in accord with his theory. Only after splenic tissues have recovered or regenerated from specific antigenic assault do they have the power to produce corresponding antibodies *in vitro*.<sup>2</sup> Whether or not this "preparedness" is due to selective regeneration or to metaplastic proliferation, however, has not yet been determined.

1. MacNider, W. deB.: *J. Pharmacol. & Exper. Therap.* 56: 359, 373, 383 (March) 1936.

2. Tissue Preparedness for the Production of Specific Antibodies, editorial, *J. A. M. A.* 110: 2156 (June 25) 1938.

## Current Comment

### "YOUR HEALTH" ON THE AIR AGAIN

Beginning October 19 and for thirty-six weeks thereafter the American Medical Association and the National Broadcasting Company will again unite in offering the American people the radio feature Your Health. Details as to date, time and topics will be found either under Association News or in the Organization Section of *THE JOURNAL* and monthly in a radio department supplementary to the programs in *Hygeia*. This radio program, which received the First Award in its classification from the ninth annual conference of the Institute for Education by Radio,<sup>1</sup> thus enters its fourth year of dramatic presentation, its sixth year of continuous fall, winter and spring broadcasting and its second year in a form designed specifically for supplementary use in connection with health teaching in the schools. The program has been used for health teaching by the schools in New York, Chicago and numerous other cities in all parts of the United States. Comments relative to it have been received from the British Isles, where it has been heard through short wave broadcasting. It is based on the conception that health teaching can be enriched and its value enhanced by presentation of health situations in interesting and amusing dramatic form with appropriate musical interpolation, all presented under the experienced direction and by the able artists of the staff of the National Broadcasting Company. The ultimate usefulness of such a program depends on its local reception. All that the American Medical Association and the National Broadcasting Company can do is to put the program on the network. To be effective, it must be broadcast by as many as possible of the local stations affiliated with the network; of these only a few are owned and operated by the National Broadcasting Company and only over these has the network any control. All other stations affiliated with the network may broadcast the program Your Health locally or they may not. Their decision depends largely on whether or not revenue-producing local programs are available at the same time. In many instances when the program Your Health has not been broadcast it has been because of previous commercial commitments. Therefore local medical societies and auxiliaries should make immediate contact with the managers or program directors of the local stations on the Blue network of the National Broadcasting Company as listed on page 945 of this issue of *THE JOURNAL* and inform them as to the character of the program Your Health and the day and hour when it will be on the network. In most instances radio stations are eager to use good educational broadcasts if they learn about them in time to avoid conflicts with revenue-producing features, which latter obviously the station must have if it is to pay its expenses. In some instances when commercial commitments already have been made it may be possible

by conferring with the commercial sponsor to effect a change of schedule satisfactory to all concerned which will permit the local broadcasting of the program Your Health.

### DEATHS FOLLOWING ELIXIR OF SULFANILAMIDE-MASSENGILL: VII

On November 6, 1937, *THE JOURNAL* published a special report under the auspices of the A. M. A. Chemical Laboratory dealing with the chemical composition of elixir of sulfanilamide-Massengill, pharmacologic work reporting results following the administration of elixir of sulfanilamide-Massengill, and pathologic studies on the necropsy material from both animals and man. In addition there was a map indicating where the deaths had occurred. The pharmacologic and pathologic reports by Drs. Geiling and Cannon indicated that further investigations were under way. The preliminary investigation showed that there was no essential difference in the results whether elixir of sulfanilamide-Massengill in the doses recommended or comparable doses of a "synthetic" mixture or of diethylene glycol were administered. In the more extensive work by Geiling and Cannon (reported elsewhere in this issue<sup>1</sup>) these conclusions have been confirmed. In addition the authors have had an opportunity to study the possible mechanism of the action of the elixir and of diethylene glycol alone. They again report that the pathologic picture is essentially similar in the different species of animals when given the three preparations containing diethylene glycol that have been enumerated; that the pathologic changes were apparently those of a severe chemical nephrosis with intracellular edema of the epithelial cells of the convoluted tubules resulting in tubular obstruction by compression and by the intraluminal formation of casts. This intracellular edema in the kidneys leads to internal disorientation of cells of the convoluted tubules and offers an explanation for the tubular obstruction, anuria, uremia and death. Whether this intracellular change is due to cellular anoxia or whether it is due to hygroscopic properties of diethylene glycol are questions needing further investigation. In analyzing the composite clinical picture they bring out that there was apparently considerable variation in the responsiveness of patients to elixir of sulfanilamide-Massengill. They examined tissues of fifteen persons who died following the use of the diethylene glycol-containing elixir. Their observations coincided essentially with those reported by Drs. I. A. Nelson and H. A. Ruprecht and by Dr. Hagebusch as well as by a number of others.<sup>2</sup> Evidently the time interval between doses and the concentration in which the elixir was recommended for human use exceeded the capacity of the body to handle the drug without producing serious injury. The pharmacologic staff of the Food and Drug Administration at Washington is conducting experiments which according to unpublished reports are in general accord with the observations reported by Drs. Geiling and Cannon.

1. Geiling, E. M. K., and Cannon, P. R.: Pathologic Effects of Elixir of Sulfanilamide (Diethylene Glycol) Poisoning. A Clinical and Experimental Correlation, Final Report, this issue, p. 919.  
2. Drs. Harry C. Schmeisser, T. C. Moss, C. E. Gillespie and K. M. Lynch have reported similar results.

1. Award to American Medical Association Radio Program, Current Comment, *J. A. M. A.* 111:160 (July 9) 1938.

# ORGANIZATION SECTION

## AMERICAN MEDICAL ASSOCIATION STUDY OF MEDICAL CARE REPORT FROM ROCK COUNTY, WISCONSIN

The study of need and supply of medical care inaugurated last February<sup>1</sup> by the American Medical Association through its state and county medical societies is progressing. Study forms and instructions to assist state and county medical societies in the study of medical care have been sent on request to forty-three states and the District of Columbia.

Several county medical societies have already finished their local studies of the need and supply of medical care and have sent completed summary sheets and reports of findings and recommendations to the Bureau of Medical Economics. Following are the results of the study made by the county medical society of Rock County, Wis. Other reports will be published from time to time.

### ROCK COUNTY, WISCONSIN

Rock County covers an area of 716 square miles in the extreme southern portion of Wisconsin. The county forms part of the Illinois-Wisconsin state line, approximately midway between Lake Michigan and the Mississippi River, and lies in a manufacturing and dairying district. According to the 1930 census the population of Rock County was 74,206. The two main population centers are the cities of Beloit, with a population of 23,661, and Janesville, with 21,628 persons. A total of 30,041 persons were gainfully employed in 1930: 12,719 in manufacturing industries, 11,765 in trade, service and other nonmanufacturing industries, and 5,557 in agriculture.

In economic status Rock County ranks seventh of the seventy-one counties in Wisconsin, according to the Wisconsin Regional Planning Committee. This ranking is based on weights given to factors such as per capita income, percentage of population on relief, employment, occupational trends and health. However, with regard to health, as measured by birth and death rates in relation to average birth and death rates for the state, Rock County was ranked forty-eighth.

The study of medical care in Rock County was conducted under the auspices of the Rock County Medical Society by the board of trustees, Drs. G. W. Belting, president, C. R. Gilbertson vice president, O. W. Friske secretary, Wayne A. Munn, H. E. Kasten, W. T. Clark, F. Van Kirk and W. O. Thomas. By seeking the cooperation of all individuals and organizations concerned with medical care in Rock County, such as physicians, dentists, nurses, pharmacists, hospitals, health departments, welfare and relief agencies, schools, colleges and other organizations, this study committee determined the supply of and the need for medical services in Rock County, as follows:

An inventory of the medical services and facilities was made which revealed that there are 102 physicians: eighty-eight in active practice, three in administrative positions, and eleven retired or not in practice; sixty

dentists; fifty-two full time and ten part time private duty nurses and four full time and two part time public health and visiting nurses available for nursing care of the sick in their homes; five hospitals: three general hospitals with a bed capacity of 218, one tuberculosis hospital with sixty-eight beds and one mental hospital with 330 beds; thirty-five pharmacists; four clinics—two operated by the health departments and two by welfare and relief agencies—providing for general medicine and surgery, maternal and child welfare, eye, ear, nose and throat, nervous and mental, venereal disease, tuberculosis and dental patients; seven health departments; one private and two government agencies which arrange for or provide services such as care in physician's or dentist's office, medical care in the home, hospitalization, drugs, eyeglasses and surgical appliances; twenty schools below the college level providing health supervision services for pupils; one college with a student health service, and seven other organizations such as mutual benefit associations and fraternal orders which arrange for or provide medical services.

Such a matter of fact inventory served a useful purpose by indicating the nature and extent of the agencies through which medical services are made available to the residents of Rock County. For example, there is a physician in active practice for every 843 persons in Rock County, which is fewer persons per physician in practice than the average for the United States. No person in the county would have to travel farther than fifteen miles to reach a physician. During 1937 general hospital beds in private rooms were 76 per cent occupied, in semiprivate rooms 55 per cent and in wards 63 per cent, indicating that general hospital beds are fairly well distributed according to room accommodations and that the number of such beds seems more than adequate. The daily room rates charged, \$2.50-\$3 for a ward, \$3-\$4 for semiprivate and \$4.30-\$6 for private accommodations, are not excessive.

The question of availability of medical services for indigents and for low income persons was investigated fully. More than 3,000 persons received free medical service direct from physicians and dentists in the office, home or hospital. Over 500 patients received hospital care, free or at public expense, from hospitals within the county, in addition to some 200 patients sent at public expense to the Wisconsin General Hospital in Madison. More than 27,000 days of hospital care were provided at no expense to the patients. Nursing visits made without charge to patients numbered more than 4,500. Eighteen pharmacists compounded 390 prescriptions without charge and 5,954 prescriptions at cost or reduced fees.

Information obtained from all sources indicates that medical services are readily available in Rock County. The health department, with thirty requests for medical care, reported no difficulty in obtaining such care. Of 162 persons reported to the health department as in

1. J. A. M. A. 110:77B (Feb. 12), 127B (March 5) 1938.

need of medical care which they were not receiving, the causes were unemployment or inadequate income and a lack of knowledge of the procedure for obtaining medical care. Approximately one fourth of these persons did not desire medical care because of indifference or unwillingness to cooperate with any social agency.

#### COMMENTS ON THE NEED FOR MEDICAL CARE

Some comments on the need for medical care were as follows:

##### From physicians:

There is no one in Rock County who cannot secure medical, dental or hospital service. Every one can secure aid, unless they are too lazy to come and see a doctor. Our outdoor relief takes care of any one that is indigent for any reasonable illness; the only thing excepted is chronic pelvis relaxations, hernias, and things not causing acute trouble. There are some borderline deadbeats who drink up all of their money that do have trouble routing out a doctor at night, but the next day they can secure aid at the hospital for any acute illness. The family welfare, visiting nurse association, and all agencies bring these people to the doctor.

I have found no cases in which a patient was refused care because he was unable to pay. I have found many cases referred by agencies such as the Family Welfare, Crippled Children's Association, the Police Department, Municipal Hospital, where the doctor's services were expected gratis and no attempt was made by those organizations to secure compensation for the physician. I have found several cases where payment for adequate care of the patient has been refused by the relief agencies but has been carried out at his own expense by the physician.

It is my belief that in Rock County there is no need for medical services that is not supplied by the County Welfare Department, the health departments of the county and cities, and private welfare agencies as well as those supplied by the County Judge under the state law. The public welfare department not only supplies necessary medical care but such care as may seem indicated to prevent possible disability and dependency in the future such as removal of tonsils and infected teeth. Glasses are supplied to school children who need them and also to adults whose defective vision may incapacitate them for doing their regular work or who if supplied glasses could be put to work. Hernias are treated with trusses or if the individual is young and would be taken into private employment after operation, operation is authorized. In other words, medical service meets not only emergency needs but has been placed on a constructive social basis with the idea of returning disabled persons to useful employment. Strict supervision is kept over all medical services rendered to the end that unnecessary medical expense is not authorized and the cost to the community is kept within reasonable bounds. Consideration is given to all elements of society in an effort to be fair to the patient, the taxpayer, and the physician.

##### From dentists:

I believe the present system used in Rock County is very good, efficient, and fair to the profession and the public.

The local relief takes care of the operative cases needing extraction, but otherwise persons do not get the work they should have done, such as just ordinary extractions where no local or systemic reaction is noted; and practically no restorative work is allowed on any except minors and many are in need.

People who are not being treated have every opportunity to receive dental care so far as I know—either through the county setup or by private dentist.

##### From a hospital superintendent:

All of the hospitals of the county are of the opinion that the people are receiving adequate medical care through the relief setup. They, however, deplore the fact that the county is unable to pay only such a small fee as is stipulated in their contract.

It is the general feeling of the supervisors of hospitals that relief patients in general receive much better care than the borderline type of individuals.

##### From health officers:

In Beloit any one who wants to be vaccinated, have shots for diphtheria or a tuberculin test can get it free of charge and is urged to do so. Indigents requiring medical care can easily get whatever they require through the Relief Office. I believe the problem here is how to get hospital care and laboratory and x-ray work for self-supporting people of the low income group.

From my observation, there are many adults and children who very badly need medical care. Many of them insist they are unable to pay current medical fees. One or two have bitterly criticized these as being too high. Many families needing care do not appreciate its value and it would seem that only through much more education of the general public can this attitude be changed.

##### From pharmacists:

We have very good facilities for the needy to get aid under our existing county aid and city health office. If people properly apply, they will be taken care of and so far we have had no complaints, and I wish to comment on the policy that the patients have their choice of the doctor, and the doctor has freedom to prescribe what he knows best for their individual needs, not being limited or restricted in a real humane cause.

The patients on county relief do not hesitate to call a physician and probably get more medical attention than the average individual who has to pay for services. The above statement does not infer that they receive better service; it only means they receive more in proportion. The present system is much preferred to having only two or three physicians in the whole county take care of these people. We do not receive a fair remuneration for our services, so we accept what is forced upon us.

#### RESPONSIBILITY OF LOCAL AUTHORITIES

The development of the present arrangement for the care of indigents in Rock County illustrates the struggle that is often necessary to get local authorities to recognize their responsibilities to the indigent sick. Prior to 1932 the indigent sick in Rock County were cared for by two physicians hired by the county board on a part time basis. The operation of this arrangement is described as follows:

Each physician received \$100 a month, plus allowances for drugs and for obstetrical cases over and above a minimum which was stipulated in the contract. This system was very unwieldy and the county physician was completely "swamped" with work, patients frequently having to wait several days for an appointment to see the county doctor. Every one was dissatisfied because they were forced to accept the services of a certain physician whether they liked him or not, and obviously this man could not render effective service to the great number of people he was expected to care for.

Additional funds for the medical care of the indigent sick could not be obtained, so the Rock County Medical Society created "Cooperative Medical Clinics, Inc.," to operate two clinics for indigents with all services donated by physicians. Drugs and hospitalization could be obtained in an emergency case. By February 1933 the families on poor relief had increased to 3,143 and the burden of free medical care was becoming too heavy for physicians to carry. A committee from the medical society secured a temporary agreement with the Rock County Board of Supervisors whereby certain patients who could not be cared for by the county physician could receive care from other physicians, who would be paid 50 per cent of regular minimum fees. Finally the members of the Rock County Medical Society concluded that it was no longer possible for



physicians to carry the ever increasing load of medical care for relief persons, and the following resolution was passed:

WHEREAS, The care of the indigent is properly and legally a government function; and

WHEREAS, Medical, dental, surgical and hospital care is specifically mentioned in the laws of the state along with food, clothing, heat and shelter as necessities which must be furnished the indigent; and

WHEREAS, The medical and dental professions have for a great many years carried an unfair proportion of relief work along this line; and

WHEREAS, The situation is such that we can no longer continue to do this work gratis; and

WHEREAS, The care of the indigent is a county responsibility and the failure of the county to assume its obligation operates to deny the larger group of citizens who are striving to maintain an independent status in life the lesser rates which physicians would receive in the event that they did not have to carry the complete load of the indigent; therefore, be it

*Resolved*, That the members of the Rock County Medical Society, and the Rock County Dental Society in special meeting assembled, go on record that they can no longer gratuitously care for the indigent.

A committee was then appointed to meet with the county board of supervisors, and after many stormy sessions an agreement was reached whereby indigent persons were to have free choice of physician. The physician would receive 50 per cent of his regular minimum fee. Hospitals were to provide hospital care at a minimum rate of \$17 weekly plus certain extras provided in the fee schedule, and pharmacists were allowed 20 per cent above cost for drugs and medical supplies. A description of the operation of this agreement for the care of the indigent is given as follows:

A physician is given an order to care for an indigent patient by the Rock County Relief Department. Attached to this order is a double postcard upon which the patient's physician must make an immediate report and an estimate of the number of visits or the type of medical work which the patient requires. All indigent patients have an absolute choice of physician and may get a relief order to see any one they wish. The only restriction being placed upon them is that they must keep the doctor they choose for at least one month and cannot change doctors until the following month unless for very urgent reasons. In case of surgical work or any extended illness, the consultant for the county board must see the patient before any expense is involved to determine the necessity for special care. The Committee on the Care of the Indigent [consisting of four physicians appointed by the medical society] meets on the first Tuesday of every month to audit all bills presented for the indigent.

The Relief Department makes an investigation of the financial and social history of patients in order to determine whether or not their income justifies public assistance. General hospitals do not maintain charity wards, and every one is expected to pay unless authorized as eligible for public assistance by the Relief Department; nevertheless, as has been indicated, many patients receive free services in the hospital. Nursing organizations are reported to follow no definite procedure in determining inability of patients to pay. Also, as has been indicated, physicians render services at greatly reduced fees for persons on relief and free services to thousands of their own patients in addition to the hours of service spent in clinics. Indigent tuberculous patients are given free hospitalization in a county sanatorium. A county institution for the care of the aged and the chronically insane is also maintained which furnishes medical and surgical services for inmates at county expense.

#### ATTITUDES TOWARD ARRANGEMENTS FOR CARE OF INDIGENT SICK

The attitude toward the present arrangements for the care of the indigent sick was expressed as follows:

It was unanimously concluded that, as far as the indigent of Rock County are concerned, this phase of the care of the sick no longer presents a problem. All indigent in this community are excellently cared for as is every one who might have any possible claim upon governmental facilities for assistance in his sickness care.

The success of the arrangement for the care of the indigent has made it possible for the medical society to secure the approval of the county board for the formation of a county sanitary unit consisting of a health officer and a sanitarian. This proposal was previously turned down by the county board.

The problem of hospitalization for indigents has a special aspect in Wisconsin because of the existence of a state law which makes it mandatory on the county judge to send a patient to the Wisconsin General Hospital in Madison if the patient selects that institution. Under this law each county is given a quota of patients who may be sent to the Wisconsin General Hospital and for whom the state will bear one half of the expense and the county the other half. Consequently, Rock County must pay \$2.10 a day for all patients within a quota of 128 who select the Wisconsin General Hospital and \$4.20 a day for those patients who exceed the quota. The Study Committee felt rather strongly that this law should be changed so that the indigent patients may be hospitalized at home. Their attitude is expressed as follows:

Briefly, our County Judge has spent \$24,000 for the hospitalization of cases in the Wisconsin General Hospital during the past year, taking care of only 232 cases, while the Rock County Medical Society in its setup with the Rock County Welfare Department has hospitalized 271 patients, paid the doctors and furnished postoperative care and drugs at home for only \$17,590. The total cost of office, home care, obstetrical, and everything for the thousands of patients cared for by our Relief Department during the last fiscal year was only \$37,000. This seemed to prove to the Board of Trustees that the pernicious practice of sending patients out of the county and increasing the tax burden would have to stop. . . .

We feel we can do a better job more cheaply in our local institutions than can be done on the ordinary routine cases which are being sent away. It will always be necessary to send certain complicated cases which are especially suitable for teaching purposes to the Wisconsin General Hospital, but it is felt that the great majority of the indigent should be taken care of with our own county facilities. . . .

The Study Committee also advises the substitution of a medical committee in each county of the state for the services now performed by the county judge, this committee to have full power to determine whether or not it is necessary to send a patient to the state institution or whether there are ample facilities in the county to care for the individual. It is felt that this arrangement would be more fair to the patient, the physician, and the taxpayers of the county.

It is also pointed out that there are two distinct agencies—the relief department on the one hand and the county court on the other—handling medical relief. This, it is said, causes dissatisfaction, as each agency operates under a different statutory definition of eligibility for relief and it often happens that a patient may be denied medical aid through the county relief office and still be entitled to assistance from the county court.

## CARE OF BORDERLINE PATIENTS

The problem of caring for borderline patients was given special attention. This problem was outlined as follows:

In an industrial community such as is reported by Beloit and Janesville, about 60 per cent of the total population may be classed as borderline patients in such times as we are just now experiencing. With the various shops working only two and three days a week, the average pay check has been more than cut in half, and we have a great number of people who do not have anything left with which to pay for medical services.

There are literally thousands of people in this county who are attempting to maintain an independent status in life who are too proud to go to any doctor and ask for help when they are confident that they will have no funds available in the near future to make even moderate payments for their medical services. As a result of this situation, thousands of people are neglecting their teeth while dentists' offices remain empty, and very little reconstructive work on the teeth is being done. This summer, especially, people seem to be neglecting their children's tonsils because they can see no way in which they can pay even a minimum charge of \$25 for such work. It is obvious that hundreds of women are neglecting to care for cervical erosions and lacerations, and minor gynecological complaints, which are the precursors of cancer if long neglected. There are also hundreds of men in this county who are suffering from hernias of various types and who have no hope of having this condition corrected by surgery. It would be utterly impossible for them to take six weeks away from their work and then to be a semi-invalid for a couple of months longer in order to get a cure for their hernia. They cannot afford to be away from their occupation for this length of time, to say nothing of paying a large hospital and medical bill which would be involved.

We feel that some plan should be adopted whereby the large group of borderline patients can secure laboratory, x-ray and hospital facilities on a prepayment basis. This will greatly aid the physician because at the present time there are very few of these individuals who can avail themselves of diagnostic facilities, and consequently the doctor must do the best he can in treating these patients in his office without the aid of the various scientific devices whose value we have come to appreciate in the past few years. Once more allow us to say that perhaps this entire situation which we have outlined is no problem of the medical profession at all. When one compares the cost of medical care to that spent annually for cosmetics, whisky and automobiles, one often wonders why the family doctor should be concerned about people's problems in regard to their health. They seem to have money for everything else except for their own welfare. We do not know any reason why we should be especially concerned about something which does not seem to interest the average patient himself.

Some method of making it possible for borderline patients to have access to hospital, laboratory and x-ray facilities is pointed to as the real problem in arranging for the care of the low income or so-called borderline patients. The Study Committee looks to the committee of the state medical society which is studying arrangements for hospital insurance for assistance in meeting this problem, as it is believed that prepayment for the use of hospital and diagnostic facilities would not only make it possible for borderline patients to have greater access to such facilities but also that physicians would have a greater likelihood of collecting moderate fees.

The economic plight of the farmer, the industrial worker and the other persons in the low income group colors the whole problem of providing them with medical services. It was pointed out that the Rock County Relief Department has liberalized its views with regard to borderline patients and is now attempting to pay for medical services for certain low income families. However, the need of these individuals has to be great

and they are given a thorough investigation before a physician is authorized to care for them. A special arrangement for the care of the low income group was suggested by the Study Committee as follows:

We recommend that some system of reduced fees on a pro rata system be adopted at the next session of our house of delegates. In order that the medical profession may care for the low income groups in an ethical manner, it shall be universal and have the approval of the entire profession.

The committee also reported on the efforts of other organizations to help in the care of the sick in Rock County. The first of these is the Welfare Department, which receives money from the community chest to make loans to borderline patients for medical emergencies. The local clubs of fraternal orders also undertake to give assistance to certain groups of borderline persons. For example, one club arranges each summer to have tonsils removed from children whose parents are unable to care for them. Another club arranges to pay for eye examinations and glasses for certain persons in the county. A philanthropic organization arranges to care for crippled children with funds raised through the sale of crippled children's stamps. There are also several mutual benefit associations which assist employees and sometimes their dependents to receive medical care.

Most of these organizations have the cooperation of the medical society in their endeavor to make it possible for low income persons to receive more medical care. However, some of the arrangements are organized or operated in a manner which interferes with good medical practice and consequently causes dissatisfaction. For example, some fraternal orders to encourage membership have offered members medical service for minor illnesses by contracting with a certain doctor who is willing to provide services for the assessments of 25 cents to 50 cents monthly from each member. Such lodge practice has almost invariably been condemned by medical societies because it provides members with a meager, unsatisfactory service. The organization arranging for the care of crippled children is also criticized because of the tactics it uses to induce physicians to care for crippled children—while claiming credit for all the results achieved. The restrictions of the payment for care of crippled children and the aforementioned regulation whereby patients are sent to the Wisconsin General Hospital are also instanced as undesirable for proper and economical care of crippled children.

In reviewing the general thoughts which have been evolved as a result of the survey, the Study Committee concluded that "the medical profession must make arrangements to take the lead in all things medical" and that:

In general, doctors should be ashamed of themselves to have to admit that certain lay groups can point out the errors of our ways. The medical society should encourage constructive thinking along these lines and urge its members to get busy and keep the control of things medical with the doctor. We hope that the articles which are appearing in the lay press of today in regard to medical practice will soon make doctors conscious of the fact that they must begin to solve many of these public health problems for themselves and not wait until the government forces us to change our entire methods of practice. In other words, we should not be afraid to change our views in regard to the care of the sick but must keep our minds open to suggestion so that the medical profession will retain the position of honor which it has always enjoyed.

## GRADUATE MEDICAL EDUCATION: CALIFORNIA

A PROGRESS REPORT OF THE FIELD STUDY ON GRADUATE MEDICAL EDUCATION IN THE UNITED STATES  
BEING CONDUCTED BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

In 1935 the house of delegates of the California Medical Association decided to sponsor a series of statewide graduate courses for physicians in cooperation with the state's four medical schools. The University of California Medical School had been conducting extramural graduate instruction in central and northern California in 1934 and 1935, teams of faculty members participating in extension courses on alternate Fridays and Saturdays during each month of the school year. The data developed from this series were made available to a state association committee appointed to elaborate a program of statewide meetings and clinical conferences. The committee on postgraduate activities consisted of three members, with Dr. Clarence G. Toland chairman and the secretary of the state association as an ex officio member. In February 1937 members of the committee met with the deans of the medical schools, the secretary of the California Tuberculosis and Heart Association and Dr. Charles A. Dukes, chairman of the state association's committee on public relations.

A cooperative and uniform program was adopted, since it was realized by all that postgraduate activities were the most important means of raising the standards of the medical profession. The following proposals were made and put into effect: Medical schools and the state medical association were to cooperate in postgraduate conferences to avoid conflicting programs. Courses were to be arranged through the office of the executive secretary of the state association. At each graduate session an attempt would be made to cover one subject completely with a physician, surgeon, pathologist and roentgenologist participating. Conferences were to include clinical demonstrations. Local physicians with difficult cases were urged to present patients. Expenses incidental to the program were to be borne by the state association and county medical societies. Clinicians who conducted courses were to be reimbursed for travel and hotel expenses. The California Tuberculosis and Heart Association offered to provide half the expense of conferences held in lieu of its meetings. Instructors were to be selected from the medical school faculties and speakers were suggested by the tuberculosis and heart association, by the cancer committee of the state medical association and by other members of the state association. Other medical and health agencies were urged to join in this graduate effort. A five year study program putting these proposals into effect was published in November 1937.<sup>1</sup> Three hundred physicians and other educators offered their services under this plan.

During 1937 conferences were held in seven centers in central and southern California. The graduate committee in each local county society chose subjects from the list supplied by the state association. Of the 103 subjects offered, instruction was sought most frequently in obstetrics, gastro-enterology, pediatrics, gynecology, endocrinology, pharmacology and the clinical use of drugs, traumatic surgery, general surgery, fractures and orthopedics, cardiovascular disease, tumors and allergy. Other courses included symposiums on ear, nose and throat diseases, clinical pathologic conferences, laboratory examinations, dermatology, pneumonia, thyroid and venereal diseases. Nine hundred and fifty physicians registered for graduate training during the first year. The state association expended \$441 during 1937 for postgraduate instruction. Each county society selecting a program shared in its support. The estimated cost of postgraduate conferences for the current year is \$4,000. The chairman of the present committee on postgraduate work of the California Medical Association is Dr. John C. Ruddock.

One county society, San Joaquin, established in 1935 a permanent annual series of graduate meetings. It was proposed that each year an out of state speaker be invited to participate. At each of the seven evening programs one or more instructors would cover various phases of the subject presented. In 1935 eleven physicians instructed forty-eight members in obstetrics, thyroid, rectal, gastro-enteric and venereal disease, endocri-

nology and fractures. Each session lasted from two to three hours. A special fee of \$5 was charged for the series. This was sufficient to finance travel expenses of guest lecturers, to obtain projection equipment and to supply certificates of attendance to members of the society who were present at least 80 per cent of the time. A record of attendance showed that thirty-eight physicians attended six of the seven meetings.

In 1936 Dr. C. A. Broadbuss, first chairman of the San Joaquin county society's committee, obtained, with the aid of the San Francisco Academy of Medicine, an out of state university professor who conducted a clinic on blood diseases. Eleven other lecturers considered such subjects as pediatrics, fractures, abdominal surgery, blood, eye, mouth and throat disease, and chest diseases including roentgenology.

In 1937 the county society's graduate committee of five members organized a series of lectures on syphilis, gonorrhea, pharmacology, obstetrics and gynecology, and traumatic surgery. There is greater interest in graduate work each year, and in 1937 to encourage attendance a \$25 prize was offered to the member who wrote the best review of the course.

The annual meetings of the state association are devoted in part to graduate instruction. At the 1938 session three case histories were discussed in clinical pathologic conferences by out of state guest speakers, physicians, surgeons and pathologists. This year an out of state speaker gave a series of illustrated lectures on syphilis at the annual meeting and at twelve county society meetings throughout the state. His expenses were paid in part by the California Department of Public Health. At the annual sessions symposiums, conferences and illustrated lectures characterized the scientific meetings. The attendance in 1938 was 1,970. Of the 11,278 registered physicians in California, 5,906 are members of the state association.

From April 13 to 16, 1938, the University of California Medical School gave a short course of lectures and clinics on diseases of the digestive tract. Twenty-two members of the staff participated. Clinical presentations, outlines of treatment, and demonstrations of diagnostic and therapeutic procedures were designed to meet the needs of practicing physicians. Sessions lasted from 8 a. m. to 9 p. m. on two days and from 8 a. m. to 5 p. m. and 8 a. m. to 12 m. the two remaining days. At the conclusion of each lecture period questions were allowed. There was a two hour round table discussion. Subjects included amebiasis, intestinal worms, diabetes, constipation, intestinal obstruction, tumors and disorders of the stomach and colon, diseases of the rectum and gallbladder, appendicitis, digestive diseases of children, gastro-enteric neuroses and a discussion on vitamins. A tuition fee of \$20 included the cost of meals, a mimeographed list of diets referred to in the course and a syllabus. Announcements were sent to alumni practicing in western states and notices appeared in state and national medical journals. Thirty-eight California and five Oregon physicians enrolled.

In August and September 1937 the state university medical school in collaboration with the California Department of Public Health gave a five weeks intramural course on venereal diseases with night lectures twice weekly, members of the faculty participating. Two sessions were devoted to bacteriology and pathology, three to pharmacology, four to practical clinical management and one to public health aspects of the problem. Demonstrations of clinic cases supplemented the lectures. All practicing physicians were invited. No registration fees were charged.

The University of California Hospital and Clinic offers diagnostic facilities to rural physicians of the state who desire consultative services. Patients unable to afford adequate medical examinations may be referred to the university's medical center for study. After a comprehensive investigation, patients are returned to their own physicians with the staff's report and recommendations. This is considered a practical postgraduate conference. Over the past ten years more than 2,200 practicing

<sup>1</sup> Supplement to California and Western Medicine 47:1-13 (Nov.) 1937.

physicians have availed themselves of this service. From 300 to 360 patients from rural areas are seen in the clinic each month.

The California legislature in 1931 established a state medical library under the control of the University of California to supply registered physicians, surgeons and medical institutions with medical library services, and \$42,176 was allocated from the contingent fund of the Board of Medical Examiners for its support. An office was established at the state university medical library in San Francisco, and a southern section was established in Los Angeles. Reference service was offered and the resources of this university's library were made available to physicians of the state. Books, journals, reports, documentary reports or other material were available for loan for seven day periods, subject to transportation charges.

During the first year a librarian visited practicing physicians outside the metropolitan areas of the state, personally interviewing approximately 12 per cent of the profession. A circulating periodical service was established enabling physicians to receive regularly one or more journals in fields of special interest. Books not on reserve were mailed on request. Analysis of items lent to June 1933 showed that 607 borrowers in 140 communities had used 1,049 books and journals. At present approximately 875 physicians are using the facilities of the two sections of the state medical library. Periodicals most frequently desired are those relating to surgery, pediatrics and otorhinolaryngology. Other special journals in laboratory diagnosis and biochemistry also are in demand. British and German specialty journals are extensively circulated. The state medical library cooperates with the Lane Medical Library in San Francisco and the Barlow Medical Library in Los Angeles.

Four years ago, Stanford University School of Medicine offered a series of postgraduate review courses in cooperation with the San Francisco Department of Public Health. The six courses offered during one week in September 1935 were in cardiology, diseases of the chest, obstetrics and gynecology, syphilis, proctology and surgical anatomy for general physicians and a course for specialists in ophthalmology. Instruction was given each morning from 8:30 a.m. to 12 m. in three general courses and from 1:30 to 5 p.m. in three others. A physician could register for one morning and one afternoon course. Three evening lectures were held during the week in nephritis, hypertension, endocrinology and gastro-enteric diseases. More than twenty-eight staff physicians participated in the general instruction and five in the specialty series. Training was available at clinics, demonstrations, examinations of patients in the outpatient department and wards, in pathologic, roentgenologic, medical and surgical symposiums and in a dissecting room. Announcements were sent to all practicing physicians in California and to the secretaries of county medical societies in Oregon, Washington, Nevada, Utah and Arizona and the component societies of Hawaii. Notices appeared in state and national medical and scientific journals. A registration fee of \$20 was charged in 1935, when 149 physicians enrolled. Courses in obstetrics, proctology, cardiology and anatomy were popular.

In 1936 there were four morning courses in obstetrics and gynecology, gastro-enterology, pediatrics and cardiology (enrollment limited to fifteen) and four afternoon courses in hypertension and nephritis, neurology and psychiatry, fractures and traumatic surgery and proctology (limited to fifteen physicians). A morning and afternoon course was given in otorhinolaryngology for specialists. General evening meetings on roentgen therapy, backache, blood diseases and syphilis were included. More than fifty members of the faculty instructed 183 physicians who registered. Greatest interest was shown in fractures, traumatic surgery, obstetrics and gynecology, gastro-enterology and hypertension and nephritis.

Eight courses were offered to practicing physicians in 1937. These were on x-ray diagnosis and therapy (for physicians with experience in this field), emergency surgery and fractures, diseases of the genito-urinary tract, cardiology and electrocardiography, diagnosis and treatment of malignant tumors, surgical anatomy and operative technics (additional fee of \$10, enrollment limited to twenty-four) and the diagnosis, treatment and control of syphilis. Ward rounds in medicine (limited to fifteen physicians) and clinics in the medical specialties, including clinical pathologic conferences, were provided. A

general meeting on the evaluation of new drugs and another on problems in industrial health were held on two evenings. One hundred and thirty-nine physicians registered; two thirds of them had not previously enrolled. Emergency surgery, medical specialties, malignant tumors, cardiology and surgical anatomy were the courses best attended. A comprehensive syllabus with references, charts, diagrams and tables on malignant tumors was supplied to physicians enrolling for instruction in this subject. Registration fees in 1936 and 1937 were \$25. The facilities of the medical school and of the San Francisco Hospital were utilized for this graduate training.

Stanford University School of Medicine has, in addition to cooperating in the state association's graduate program, supplied county societies in northern and central California with teams of faculty members on request. Seven sections of the state have been furnished with programs recently.

The medical education committee of the Alumni Association, College of Medical Evangelists, has sponsored a postgraduate assembly in the fall of each year since 1934 and a clinical congress each spring since 1932. The chairman of this committee, Dr. G. M. Taylor, is assisted by four other members. At the postgraduate assembly eighteen lectures are given at half hour intervals during one day from 9 a.m. to 9 p.m., time being allowed for luncheon and dinner. All fields of medicine are considered. Speakers include members of the faculties of the state's three other medical schools and one or more lecturers of international reputation. All practicing physicians are invited and the attendance has varied from 400 to 500 each year.

The clinical congress held in the spring is conducted by members of the faculty of the College of Medical Evangelists. Morning symposiums, afternoon clinics, demonstrations and exhibits and early evening lectures followed by a clinical pathologic conference characterize the day's program. This year symposiums were devoted to the preoperative and postoperative care involved in surgical specialties, including anesthesia and medical complications. Ten physicians and surgeons participated in symposiums. In the seventeen demonstrations and exhibits thirty members of the faculty considered such subjects as fever therapy, orthopedic surgery, proctology and medical and visual education, utilizing patients, models and motion pictures. A registration fee of \$1.50 was charged, no fees being required of medical students, interns or residents. The facilities of the college are used for these graduate assemblies.

The Department of Urology, College of Medical Evangelists, offers a course in diagnostic urology, including diagnostic technics, one morning each week. Two physicians can be accommodated. A fee is charged. A volunteer residency is available in urology. This is of from three to twelve months' duration. A short refresher course lasting from one to two months consists of observations of diagnostic and cystoscopic procedures.

The University of Southern California School of Medicine offers graduate courses in surgical anatomy, material and instruction being available for special dissection in otolaryngologic and neurologic anatomy. Graduate courses are scheduled in other preclinical departments and are open to qualified physicians.

The California Department of Public Health has conducted clinics for crippled children since 1927. Fifty or more patients may be seen in one of these clinics by visiting orthopedic surgeons who consult with the local physicians.

The California Tuberculosis Association has visited approximately three fourths of the counties of the state in connection with case finding studies or educational programs. When a clinic is held the interest and cooperation of the local county society is obtained. Local physicians may participate in the examinations and obtain professional training, including instruction in tuberculosis testing and x-ray interpretation. The annual meeting of the tuberculosis association is held over three days prior to the annual session of the state medical association. In the clinical section last year such subjects as pneumothoracic surgery, symposiums on syphilis and x-rays, and diagnostic problems in tuberculosis were included. The attendance varies usually from 300 to 500.

The Heart Committee of the San Francisco County Medical Society and the San Francisco Tuberculosis Association was organized in 1930. The postgraduate course offered that year

without fee to physicians practicing in northern California was attended by 227 physicians from sixty-five cities and towns. Each succeeding year a two day postgraduate course has been offered with constant increase in interest and attendance.

In 1935 the California Heart Association was organized and expanded the postgraduate activities initiated by the San Francisco committee. The eighth annual postgraduate symposium was held in November 1937. The facilities of ten local hospitals were used with lectures, demonstrations, afternoon study groups—each limited to from five to ten physicians—and case presentations. Members of the faculties of the two medical schools in San Francisco and other physicians conducted the symposium. A fee of \$2 was charged for two days' training. Three

hundred practicing physicians registered and a mimeographed syllabus was supplied to each.

The Los Angeles Heart Association offers an annual course for physicians practicing in the southern part of the state. A round table discussion of the physiologic, clinical and pathologic problems in heart disease featured the 1937 fifth annual symposium. In addition to lectures, exhibits of pathologic specimens and electrocardiograms were on display at the Los Angeles County Medical Association Building. A \$2 fee was charged.

In 1938 the California Heart Association held a four day symposium concurrently with the annual meeting of the California Medical Association. This was arranged by the state medical association's committee on postgraduate work.

## OFFICIAL NOTES

### DATE OF ST. LOUIS SESSION

The next annual session of the American Medical Association will be held in St. Louis, May 15 to 19, 1939.

### THE RADIO PROGRAM "YOUR HEALTH"

Resumption of Broadcasts October 19 for  
Thirty-Six Weeks

The American Medical Association and the National Broadcasting Company will resume the radio program Your Health beginning Wednesday October 19 and running consecutively for thirty-six weeks thereafter. The program will be broadcast over the Blue network of the National Broadcasting Company each Wednesday at 2 p. m. Eastern Standard time (1 p. m. Central Standard time, 12 noon mountain time, 11 a. m. Pacific time).

This will be the fourth series of programs broadcast in dramatic form portraying fictitious but typical incidents of significance in relation to health. The radio scripts will be written by Leslie Edgley, an independent radio script writer affiliated with the Artists' Bureau of the National Broadcasting Company and author of the successful radio dramatic feature "There Was A Woman." Material for the scripts will be furnished by the Bureau of Health Education of the American Medical Association.

The medical societies can do much to influence the local radio stations to carry this program, by showing an interest in it and by informing the local manager, as well as the local school authorities.

The following is a list of the stations connected with the Blue network of the National Broadcasting Company, but no assur-

ance can be given as to how many of these stations will broadcast the program Your Health:

#### Basic Blue Network

WJZ	New York	WEER	Buffalo	KSO	Des Moines
WBZ	Boston	KDKA	Pittsburgh	KOIL	Omaha
WBZA	Springfield	WHK	Cleveland	WREN	Kansas City
WEAN	Providence	WSPD	Toledo	WLW	Cincinnati
WICC	Bridgeport	WXYZ	Detroit	WSAI	Cincinnati
WFL	Philadelphia	WOWO	Fort Wayne	WCKY	Cincinnati
WBAL	Baltimore	WENR-WLS	Chicago	WRTD	Richmond
WMAL	Washington	KWK	St. Louis	WABY	Albany
WSYR	Syracuse	WMT	Cedar Rapids	WJTN	Jamestown, N.Y.
WHAM	Rochester	WTCN	Minneapolis-St. Paul	WLEU	Erie

#### Supplementary Facilities

WFEA	Manchester, N.H.	WFBC	Greenville	KYOD	Denver
WBRE	Wilkes-Barre	WWNC	Ashville	KLO	Ogden
WSAN	Allentown, Pa.	WIS	Columbia	KIDO	Bolse
WORK	York, Pa.	WCSC	Charleston	KGIR	Butte
WCOL	Columbus, O.	WJAX	Jacksonville	KFFA	Helena
WGL-WOWO	Fl. Wayne	WFLA-WSUN	Tampa	KGHL	Billings
WOOD	Grand Rapids	WIOD	Miami	KSEI	Pocatello, Ida.
WBOV	Terre Haute	WMC	Memphis	KTFI	Twin Falls, Ida.
WGBF	Evansville	WWSB	Atlanta	KGO	San Francisco
WEBC	Duluth-Superior	WBRC	Birmingham	KECA	Los Angeles
KSOO-KELO	Sioux Falls, S.D.	WJDX	Jackson	KEX	Portland, Ore.
KANS	Wichita	WSMB	New Orleans	KJH	Seattle
WTAR	Norfolk	WALA	Mobile	KGA	Spokane
WPFF	Raleigh	WROL	Knoxville	KFBK	Sacramento
WSOC	Charlotte	WAVE	Louisville	KWG	Stockton
		WSM	Nashville	KMJ	Fresno
		WTMJ	Milwaukee	KERN	Bakersfield
		WTBA	Nadison		

The programs to be broadcast in the first group, together with their dates and their topics, are as follows:

October 19, What is Health?  
October 26, Growing Strong.  
November 2, Seeing and Hearing Well.  
November 9, Healthier Boys and Girls.

These programs will be broadcast on what is known in radio as a sustaining basis; that is, the time is furnished gratis by the radio network and local stations and no revenue is derived from the programs. Therefore, local stations may or may not take the program, at their discretion, except those stations which are owned and operated by the National Broadcasting Company.

## MEDICAL ECONOMIC ABSTRACTS

### STATE MEDICINE PROPOSED IN NEW ZEALAND

In spite of its international fame for morbidity and mortality rates lower than those of any country with sickness insurance or state medicine, the Labor Party, now in power in New Zealand, has presented a program of social pensions which includes "a universal general practitioner service free to all members of the community who require medical attention."<sup>1</sup> The Prime Minister states that the scheme embraces free hospital or sanatorium treatment for all, free medicines and free maternity care, including maintenance in a maternity house and a grant to assist mothers in special circumstances to provide outfits for their babies. No provision is made for specialist services outside of hospitals, although some statements

from the government indicate an intention to add these later. Critics charge that the additional expenses required by the additional and increased pensions plus the medical service will almost double a present very high tax rate.

Some form of sickness insurance has been under discussion for several years. Representatives of the New Zealand Branch of the British Medical Association have held numerous conferences with members of the ministry to discuss proposed medical programs and, while agreeing to do their best with whatever scheme might be introduced, have insisted that since the results achieved in the protection of health under the system of private practice in New Zealand were already so greatly superior to those obtained in countries with sickness insurance and state medicine, it would be better to develop and improve that system than to abandon it in favor of any universal governmental scheme of medical practice.

Just how closely the medical professions agree on the effect of contract and governmental schemes of medical care on the

1. (a) New Zealand Herald, April 4, 1938; (b) National Health Insurance Section, Supp., New Zealand M. J. 37:9 (April) 1938.



quality of the medical service is illustrated by the following extracts from a statement of the chairman of the National Health Insurance Committee of the New Zealand Branch of the British Medical Association submitted to the Minister of Health of New Zealand:<sup>2</sup>

The relationship which is established immediately a patient summons a doctor has been, and always will be, a strictly personal relation of a very special sort—*independent of fee or the standing of the patient.* Medical service has a personal and confidential character which is as many sided as human nature itself and touches at every point in people's lives. The confidence of the patient implies corresponding responsibility on the part of the doctor, and no limits can be set to what may be required of it.

Consequently medical service does not lend itself readily to terms of contract like the supply of a definite number of standard articles, or the giving of so many hours of specified work. Contract necessitates limitation of responsibility. There would be the tendency for the doctor's services to be limited by the terms of the contract rather than by the exigencies of the case. If only part of the doctor's services are on a contract basis, the stimulus of private practice tends to maintain the standard of his contract work.

For this reason contract practice has been and should remain, restricted to conditions in which no other more satisfactory arrangement can be made. . . .

Nowhere does Health Insurance set standards, nor are its standards maintained by its own regulations and definitions. It is unheard of for any one to seek to advance his professional standard and method by study or emulation of Health Insurance work. The standard is set by the best of voluntary, uncontrolled, private or honorary practice, which it is therefore important to preserve in as large a body as possible. . . .

Professional organizations such as the Faculties of Medicine of Universities, the Colleges of Surgeons and Physicians and Medical Associations, such as our own, are the chief agencies through which medical knowledge, system and ideals have been promoted, developed and promulgated. . . . This policy has been responsible for the preeminence of British medicine as similar policy was for the initiative displayed by German medicine two generations ago, and it is for the prestige of American Medicine today. . . .

The adoption of a universal scheme would lead to those very distinctions which it is the object of this association no less than of the government to avoid. A certain number of doctors would prefer to remain outside the scheme, and a certain number of people would prefer to make their own arrangements as they have done heretofore, although being entitled to medical benefits under the scheme. While there might be few who would do this habitually, many would on occasions. Thus there would grow up two types of practice from which we so far, fortunately, have been free—panel practice and private practice. Even if both were in fact equally efficient, the former would come to be regarded as the "poor man's" practice. . . .

Unfortunately the average patient is not conscious of the necessity for treatment to be based on accurate diagnosis, as witness the millions spent on patent medicines. All he asks for is treatment, and under a panel scheme without ancillary services treatment may well become empirical.

What we have all along wished to emphasize is that the promotion of health is a greater object than the treatment of sickness, though we do not underestimate the latter; and that National Health Insurance, being really a system of indemnification for sickness, does not materially advance the greater object.

The medical association suggests, as an alternative to sickness insurance or state medicine, continuation and expansion of the program of health care that has already produced such famous results in New Zealand. It proposes a number of improvements in environmental conditions, including housing and better working conditions. It points out that "there are admittedly problems of nutrition requiring investigation" and suggests that if these conditions can be improved it "will do more for the people than all the dietary systems in vogue or the entire National Health Insurance formulary of medicaments." The association also urges an extension of preventive and antepartum care and emphasizes, especially, the possibilities open to the extension of research.

In regard to matters of administration the view we take is that National Health Insurance is a system invented over fifty years ago to meet difficulties in other countries which, to a large extent, have been overcome in New Zealand by following lines and methods of our own. The health insurance system involves a complicated administration of its own; and, if we superimpose on our own health administration this borrowed system, a cumbersome structure will result. We consider that it would be wiser before introducing National Health Insurance to review and amend the existing administrative machinery which has developed in an irregular manner during the rapid changes of a century's growth and settlement.

The association urges the extension of health department activity and a reorganization of hospital administration so as to obtain a better distribution both of hospitals and of the service which they supply.

## BRITISH NURSING PROBLEMS

Some of the features in "Evidence submitted by the British Medical Association to the Interdepartmental Committee on Nursing Services"<sup>1</sup> suggest interesting comparisons with similar problems in the United States.

"There is, undoubtedly," says the statement, "an insufficiency of candidates of any type for the nursing profession, and the shortage will become still more acute in the near future on account of the extension of hospital accommodation, of the increasing complexity of medical and surgical procedures, and of the reduction of the nurse's hours of work." This shortage is charged to the interruption between graduation from what would be called high school in this country and the opportunity to enter nursing training, and on the strenuousness of the training and the work that accompanies it, as well as the discipline to which the prospective nurse is subjected. Even after graduation the salary and conditions of work suffer by comparison with other occupations.

It is rather surprising to note that it is proposed to meet these conditions by a lowering of professional standards. Military terms seem to have invaded all vocabularies, so that the question of securing additional candidates is treated under the head of "Recruitment." It is urged that discipline be relaxed and opportunities for leisure during the training be expanded.

The discussion of "Terms and Conditions of Service" arouse memories of proposals under the Wages and Hours Bill, although it is recommended that "There should be a maximum working period of ninety-six hours a fortnight," and "one free day in each week." The discussion continues with the statement that "It is desirable that there should be provided within each hospital machinery for the discussion between the hospital authority and the nursing staff of the various problems of mutual interest, including the grievances of nurses."

"Assistant nurses" with lower professional standards are proposed to undertake certain types of nursing. The examinations now given are criticized as too technical, and a "Group System for Training" is proposed by which an association of hospitals in an "appropriate area" would be "linked together to form a training unit." It is held that such a system "would probably be advantageous not only to the probationer but to the smaller and special hospitals, which would enjoy the services of a steady stream of partially trained nurses." This proposal sounds much as if the medical profession were to say to the public "We know you should have good medical care at all times, but for the little things that come up we are going to send out a sort of half-trained office girl."

## UNITED STATES NOT SO BAD

That the United States is still out ahead of Great Britain in health care seems to be the opinion of Dr. J. O. Dean in a review of the Report on the British Health Services by PEP in the *American Journal of Public Health* (28:786 [June] 1938). After an analysis of the material in that comprehensive report, Dr. Dean says:

"PEP will dispel any doubt in the minds of those who feel that conditions of general well-being in the United States are unfavorable in comparison with those of Great Britain. Apparently the British attitude is to 'hit upon' rather than to develop measures fostering health. The reviewer cannot escape the feeling that despite Great Britain's more comprehensive statutory provisions for the relief or prevention of ill health, she lags far behind the United States, largely because there has been lacking a dynamic attitude permitting necessary changes to be effected in the social machinery for the better adjustment of forces producing health."

1. Nursing Problems—Evidence submitted by the British Medical Association to the Interdepartmental Committee on Nursing Services. Supp. Brit. M. J. 1:301 (May 14) 1938.

2. Footnote 1b, pp. 8-18.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

### ALABAMA

**Society News.**—The Marion County Medical Society will be host to the Northwestern Division of the state medical association at a meeting in Winfield, September 15. The speakers will include Drs. Arthur Neal Owens, New Orleans, "Repair of Facial Defects"; William E. Prescott Jr., Birmingham, "Clinical Use of Ovarian and Pituitary Hormone"; Julius E. Linn, Birmingham, "Anorectal Pain and Its Clinical Significance"; Clayborne R. Whitman, Tusculumbia, "Why Some Bad Results in Obstetrical Practice?" and Ellis Dice Lineberry, Birmingham, "The Anemias, Their Diagnosis and Treatment."

**Illegal Practitioner Serves Jail Sentence.**—A self-styled "herb doctor," Mrs. A. L. Hinkley, was sentenced July 29 to pay a fine of \$500 and costs or to serve 140 days in jail with an additional three months in jail for practicing medicine without a license, newspapers reported. The woman was arrested following several complaints from Negro residents of Mobile that she had defrauded them of money and personal belongings under the pretense that she would cure their afflictions and ills. Two blind witnesses related her promises to restore their eyesight. The defendant denied the allegations but admitted selling the complainants herbs and roots from which they were to make a "tea" for their "stomach trouble." Unable to pay the fine, the defendant went to jail, it was stated.

### CALIFORNIA

**Plague Infection.**—According to *Public Health Reports*, plague infection was recently proved in a pool of fifteen fleas from thirteen chipmunks shot at the Osito Girls' Camp, three miles southwest of Pine Knot, San Bernardino County.

**Graduate Courses.**—A series of graduate courses will be given at San Francisco Hospital September 12-16 under the auspices of the hospital, Stanford University School of Medicine and the San Francisco Department of Public Health. According to the program, subjects covered in the morning and afternoon will include traumatic injuries, acute abdominal emergencies and fractures, gynecology, diseases of the chest, practical management of hypertension and nephritis in the doctor's office, pediatrics, proctology, and surgical anatomy and operative technique. Courses for specialists in the mornings will be given in anesthesiology and otorhinolaryngology. Speakers at the general meetings in the evenings will be: Drs. David A. Wood, "Surgical Pathology"; Ludwig A. Emge, "Relation of Sex Hormones to Cancer"; Emile F. Holman and Dwight L. Wilbur, "Disease of the Thyroid Gland," and Harry E. Alderson and Merlin T. R. Maynard, "Diagnosis and Modern Treatment of Common Dermatoses."

### COLORADO

**Denver Creates Medical Service Bureau—Accepts Hospital Plan.**—At a meeting of the Medical Society of the City and County of Denver August 16, a resolution was unanimously adopted creating a central service bureau to meet the demand for prepayment care. Dr. Paul J. Connor, Denver, was appointed chairman of a committee to work out the details of the project. At the same time the society approved the plans of the recently incorporated Colorado Hospital Service Association and accepted, without a dissenting vote, the report of its special committee which had negotiated with the service association. The decision to develop a plan for medical care of low income groups followed a survey by the society to determine whether there was a need or demand for any new form of medical practice for low income families among employed groups in the Denver metropolitan area. In the spring of 1938 questionnaires were sent to all employers in the area who employed ten persons or more. Statistical information was obtained regarding the number of employed persons in various groups whose incomes were under \$1,200 a year, from \$1,200 to \$1,500, from \$1,500 to \$2,000 and so on. Employers were also asked to indicate interest or lack of interest in such plans. Of the 35 per cent who returned full replies, the majority expressed interest in and asked for information concerning a prepayment plan and favored adherence to the basic principles of the Ameri-

can Medical Association. While actual details have not yet been worked out, the plan will be under control of the county society, will guarantee free choice of physician and will abide by the ten principles of the American Medical Association. It will not include hospital service. Cooperative and independent studies by the medical society and the Denver Hospital Council preceded the incorporation of the hospital service association. Mr. William McNary, formerly business manager of the Colorado General Hospital, Denver, was appointed executive director of the association, effective September 1.

### CONNECTICUT

**Personal.**—Lorande Loss Woodruff, Ph.D., professor of protozoology, Yale University School of Medicine, New Haven, has been appointed chairman of the department of zoology and director of the Osborn Zoological Laboratory.

**Vacancies for Physicians.**—The newly created personnel department of the state of Connecticut announces examinations for positions as assistant sanatorium physician at Undercliff Sanatorium; assistant hospital physician at state mental hospitals; chief physician of crippled children division, bureau of child hygiene, and public health physician, bureau of venereal diseases. Residence in Connecticut is not a requisite. Applications will not be considered unless they are on file in the personnel department, State Capitol, Hartford, September 10 or bear a postmark not later than that date. A separate application should be filed for each position. Application forms may be obtained from the personnel division or at any office of the Connecticut State Employment Service. Candidates must be eligible for a license to practice medicine and surgery in Connecticut and must have had at least one year of general hospital internship in a hospital approved by the American Medical Association. Preference will be given to candidates who have had training or other experience in the care of tuberculous patients and to those with special training in other branches of medicine or surgery.

### DISTRICT OF COLUMBIA

**Alumni Extension Course.**—The third annual alumni extension course of the Georgetown University School of Medicine will be held September 12-16. Out of town speakers will include Drs. Frank H. Lahey, Boston; Dean Lewis, Nicholson J. Eastman and Edward H. Richardson, Baltimore; Jerome Selinger, New York; John Mark Higgins, Sayre, Pa., and Francis C. McCormack, Englewood, N. J. The program has been designed to interest the general practitioner, while a variety of special clinics and conferences have been arranged for specialists. The "silver jubilee class of 1913" is sponsoring the course this year.

### GEORGIA

**District Meetings.**—The Eighth District Medical Society was recently addressed in Waycross, among others, by Drs. Raymond L. Johnson, Waycross, on "Malignancies of Sigmoid and Rectum"; Arthur G. Fort and Lester A. Brown, Atlanta, "Radical Mastoid Operation with Skin Graft" (motion picture); Henry W. Clements, Adel, prevention and treatment of eclampsia, and Henry J. Goodwin Jr., Douglas, ovarian hyperfunction. —At a recent meeting of the Sixth District Medical Society in Sandersville the speakers included Drs. Paul S. Kemp, Macon, on "Care of the Senile Diabetic"; Charles J. Woods, Macon, "Treatment of Skin Cancer"; Frederick B. Rawlings, Sandersville, "Some Surgical Aspects of Gallbladder Disease"; Robert B. Greenblatt and Everett S. Sanderson, Augusta, "Newer Venereal Diseases"; Robert C. Goolsby Jr., Macon, "Asphyxia Neonatorum"; David Henry Poer, Atlanta, "Differentiation and Treatment of Goiter," and John A. Bell Jr., Dublin, "Pneumococcus Meningitis." —The First District Medical Society was addressed in Savannah July 20, among others, by Drs. George H. Lang, Savannah, "Endoscopic Removal of Foreign Bodies from the Air and Food Passages"; H. F. Sharples Jr., Savannah, "Practical Application of the Endocrines in the Correction of Abnormal Menstruation"; Shelton Elliott Wilson, Savannah, "Use of Sulfanilamide in Urology," and Robert Drane, Savannah, "Intestinal Obstruction."

### ILLINOIS

**Personal.**—Dr. Loren L. Collins, Chicago, has been appointed full time medical director of the La Salle County Tuberculosis Sanatorium, Ottawa, effective September 1; Dr. Albert J. Roberts has held the position since it was created in 1919 on a part time basis.—Dr. Joseph H. Kinnaman, Charleston, W. Va., has been appointed assistant health commissioner of Peoria with supervision of school health activities, effective

August 15. Dr. Kinnaman formerly served as health officer of Topeka, Kan., as assistant health commissioner of Cincinnati, as instructor, department of pharmacology and materia medica, State University of Iowa College of Medicine, Iowa City, 1927-1930, and as deputy commissioner to the Iowa State Department of Health in charge of child health and health education activities.

#### Chicago

**The National Health Program and American Medicine.**—The North Side Branch of the Chicago Medical Society will devote its meeting September 15 to a consideration of "The National Health Program and American Medicine." The speakers will include:

Dr. Olin West, Secretary and General Manager, American Medical Association, The Conference.

Dr. Roger I. Lee, Boston, Trustee of the Association, Teaching and Practicing Medicine.

Dr. William F. Braasch, Rochester, Minn., Chairman, Advisory Committee on Supply of Medical Care of the Association, Progress of the A. M. A. Survey.

Dr. Irvin Abell, Louisville, Ky., President of the Association, American Medicine.

Dr. Morris Fishbein, Editor of THE JOURNAL, will open the discussion.

A dinner will precede the meeting, which will be held at the Drake Hotel. The meeting is open, but dinner reservations should be arranged through Miss Wolf, Randolph 0244.

**Business Joins Campaign Against Syphilis.**—A drive against syphilis will be launched in the city, September 5, by business groups, who will participate in a campaign started last year by the Chicago Department of Health under the auspices of the U. S. Public Health Service. Included in the cooperating agencies are the State Street Council, representing major loop merchants; the Chicago Association of Commerce, representing leading industries; the Cook County Retail Council, an organization of community merchants, and the Illinois Federation of Retail Associations, representing twenty-one city and state merchant associations. Their first step will be to provide educational and lecture material on syphilis for all employees, according to the *Chicago Tribune*. It was stated that thirty-three concerns, including steel companies, drug stores, laundries, restaurants and bakers, have provided syphilis testing programs for their employees since last April. Since last November, when the field tests began, 79,533 have volunteered, including 7,421 high school and college students and 6,742 grade school pupils.

#### INDIANA

**Personal.**—Dr. George W. Kohlstaedt was elected president of the Indianapolis board of health August 4, succeeding Dr. Maurice Joseph Barry, who has served since 1932. Frank G. Laird was elected vice president, succeeding Dr. Leonard A. Ensminger. Dr. Herman G. Morgan began his twenty-sixth year as secretary of the board August 12.

**Changes in Health Department.**—Dr. Lewis C. Robbins has been appointed acting chief of the bureau of local health administration of the state department of health during the absence of Dr. John W. Ferree, chief of the bureau. Dr. Ferree was to begin a year's graduate work at Johns Hopkins University September 1. Dr. Albert W. Ratcliffe has been appointed assistant to Dr. Clyde G. Culbertson, chief of the bureau of bacteriology and pathology. He graduated at the Indiana University School of Medicine, Indianapolis, in 1936.

#### IOWA

**Spotted Fever.**—A case of Rocky Mountain spotted fever was reported to the state department of health, July 13, by Dr. Ross E. Gunn, Boone, in Boone County. June 23 the state hygienic laboratory reported a positive Weil-Felix agglutination reaction on a serum specimen sent to the laboratory by Dr. Robert E. Dwyer, Preston, in Jackson County.

#### KANSAS

**Committee on Automobile Accidents.**—The Kansas Medical Society has appointed a committee on automobile accidents with the following members: Drs. Arthur K. Owen, chairman; John L. Lattimore, Harold W. Powers and Fred P. Helm, all of Topeka.

**Personal.**—Dr. Henry A. Dykes, Wichita, has retired as chief medical officer of the Veterans Administration Facility in Wichita after holding the position seventeen years; he will be succeeded by Dr. George E. Tooley.—Drs. Ova P. Davis and William L. Warriner, Topeka, were guests of honor at a banquet given by the Shawnee County Medical Society in Topeka recently in recognition of their completion of forty years in the

practice of medicine.—Dr. Roy B. Weathered, Kansas City, Mo., will succeed Dr. Lawrence F. Steffen, El Dorado, as health officer of Butler County.—Dr. Samuel M. Hibbard has been elected mayor of Sabetha.

#### MASSACHUSETTS

**Society News.**—Dr. George W. Morse, Boston, was recently elected president of the Massachusetts Society of Examining Physicians and Dr. Matthew Norton vice president. Drs. Robert C. Gwin and William Pearce Coues, Brookline, were reelected treasurer and secretary respectively.

**Personal.**—Dr. Elliott P. Joslin, Boston, will deliver the two Malthus lectures and conduct a clinic in Oslo, Norway, September 5-7; he will also participate in a symposium on protamine insulin with Dr. H. C. Hagedorn, Copenhagen, and Dr. Wilhelm Falta, Vienna, before the Gesellschaft für Verdauungs- und Stoffwechsel-Krankheiten in Stuttgart September 23.

**Resolution Opposes Exclusion of Nonmedical Workers as Health Officers.**—At a meeting of the Massachusetts Public Health Association June 30 a resolution was adopted recording its opposition to the report of the National Health Officers Qualifying Board to the United States Conference of Mayors so far as it excludes properly trained and otherwise qualified nonmedical public health workers from serving as health officers. The resolution points out that public health work is not limited exclusively to medical subjects and knowledge but is inextricably dependent on engineering, bacteriology, chemistry, physics, sanitation, vital statistics, nutrition, public health education and other highly scientific but nonmedical pursuits. The resolution is based on the report published in the *American Journal of Public Health*, January 1938, recommending that only physicians shall be eligible to serve as health officers in American cities.

#### MICHIGAN

**Change in Speakers at State Meeting.**—Dr. William S. Sadler, Chicago, will address the county secretaries' conference September 20 during the annual meeting of the Michigan State Medical Society in Detroit. His subject will be "The Grand Opportunity for Leadership by the County Medical Society." Dr. Harrison H. Shoulders, Nashville, Tenn., speaker of the House of Delegates of the American Medical Association, who was originally scheduled to address the conference, is unable to attend.

**Graduate Course in Internal Medicine.**—Wayne University College of Medicine and Receiving Hospital, Detroit, will offer a graduate course in internal medicine September 12-17. Two hours daily will be devoted to bedside diagnosis and treatment. Ward rounds will be conducted with groups of from four to six persons so that each physician will have the opportunity to examine every patient. Lectures on recent advances in therapeutics will also be included. Any licensed physician may enroll in the course.

**Personal.**—Dr. Russell E. Pleune, Lansing, formerly in charge of the bureau of venereal disease control for the state department of public health, has been named director of the Dickinson County health unit, effective September 1; he succeeds Dr. Clifton E. Merritt.—Dr. Christopher J. Stringer, Detroit, has been appointed superintendent and medical director of the Ingham Tuberculosis Sanatorium, Lansing, succeeding Dr. George C. Stucky, who had held the position since 1925. Dr. Stucky has been appointed director of the Eaton County Health Department, effective September 1; he fills the vacancy left when Dr. Thomas E. Gibson, Paw Paw, resigned to accept a similar position in Van Buren County.—Dr. Fred R. Hanna has been appointed superintendent of the State Home for the Feeble-minded at Lapeer; he has been acting superintendent at the institution since May 1937.

#### MINNESOTA

**Chiropractor Jailed—Abortions.**—Herman V. Feenstra, 65, an itinerant unlicensed chiropractor, was sentenced by Judge Joseph Moriarty, Shakopee, August 10, to a four year term in prison, according to the state board of medical examiners. Following his arrest August 8 Feenstra pleaded guilty to a charge of performing illegal operations. According to the board, Feenstra stated he was born at Ackley, Iowa, and that he graduated from the Davenport School of Chiropractic in 1922. He located at Elkton, S. D., but lost his license when he became involved in illegal practices. He was convicted in South Dakota on an abortion charge and was arrested for

manslaughter, drunken driving and rape. The clerk in Brookings stated that Feenstra jumped a \$2,500 cash bond January 19 in the rape case. When apprehended, Feenstra had two grips in his car containing instruments for performing abortions. His records indicate that he has performed hundreds of these operations, charging from \$15 to \$300 per patient, the board stated.

### MISSISSIPPI

**Health Officers' Conference.**—A meeting of county health officers was scheduled to be held in Jackson August 8-9. The theme of the session was the control of syphilis, and the speakers included Drs. Felix J. Underwood, state health director; Archie L. Gray, state director of communicable disease control; Dolph V. Galloway, Meridian; Henry V. Ricks, John A. Milne, Jackson; Alton R. Perry, Laurel; Andrew Hedmeg, Natchez; Martin T. Van Studdiford, New Orleans; Charles R. Gillespie, Indianapolis; Robert H. Dejarnette, Rolling Fork, and W. E. Noblin, Jackson.

### NEW JERSEY

**Conference for County Society Officers.**—The Medical Society of New Jersey has invited officers of county medical societies to meet in Trenton September 11 for a "training conference." Following a luncheon there will be first a combined conference of all officers and later separate conferences, one for presidents and vice presidents and another for secretaries, historians and reporters. Among the subjects to be included will be county society committees, county society membership, survey of medical needs and supplies, the art of presiding, county society bulletins and activities of the state society.

**Institute for Medical Research.**—The Squibb Institute for Medical Research "to create in the medical and biological fields an industry-supported research enterprise" has been organized by E. R. Squibb and Sons at New Brunswick with a new laboratory building recently completed at a cost of \$750,000. Dr. George A. Harrop, formerly associate professor of medicine, Johns Hopkins University School of Medicine, Baltimore, will be director of research in direct charge of the institute and in addition will head the division of experimental medicine. There will be three other main divisions and in addition there will be a biochemical laboratory and a medicinal chemistry laboratory. Dr. Harry B. Van Dyke, professor of pharmacology, Peiping Union Medical College, Peiping, China, will be head of the division of pharmacology; Dr. Geoffrey W. Rake, former research associate in the Connaught Laboratories, University of Toronto, the division of bacteriology and virus diseases, and Erhard Fernholz, formerly of Princeton University, the division of organic chemistry. Hans Jensen, Ph.D., formerly of the laboratory of endocrine research, Johns Hopkins University, Baltimore, will be in charge of the biochemical laboratory, and William A. Lott, M.S., who has been head of Squibb's research group since 1926, in charge of the laboratory of medicinal chemistry. Other appointments are as follows:

Roy O. Greep, Ph.D., formerly instructor at Harvard University, Cambridge, Mass., and Bacon F. Chow, Ph.D., associate professor of biochemistry, Peiping Union Medical College, Peiping, China, to the division of pharmacology.

Arthur E. O. Menzel, Ph.D., instructor in biologic chemistry, Columbia University, New York, and Morris F. Shaffer, Ph.D., assistant in bacteriology, Harvard, to the division of bacteriology and virus diseases.

Homer E. Staveland, Ph.D., formerly research fellow in chemistry, Yale University, New Haven, Conn., and Harold B. MacPhillamy, a graduate student in the department of organic chemistry, Columbia University, New York, to the division of organic chemistry.

Sybil Tolksdorf, recently engaged in research at the Institute of Experimental Biology, University of California, associate in the biochemical laboratory.

Frank H. Bergeim and David F. Menard, Ph.D., members of the Squibb staff, associate and assistant respectively in the laboratory of medicinal chemistry.

Stefan Ansbacher, D.Sc., of the Squibb staff since 1937, associate in the division of experimental medicine.

The division of experimental medicine is working out a plan of hospital affiliation to provide clinical facilities. A ward of fifteen or twenty beds will be maintained for the observation of patients in connection with research problems at the institute. Under the direction of this division, new fellowships in medical schools will be established and existing fellowships will be continued as part of the institute's program. Dr. Harrop, a native of Illinois, graduated in 1916 from Johns Hopkins' medical school and was a member of the faculty from 1924 to 1937. The new laboratory building will be dedicated early in October.

### NEW YORK

**Conference on Problems of Rural Medicine.**—A conference on the problems of rural medicine sponsored by the staff of the Mary Imogene Bassett Hospital, Cooperstown, will meet October 7-8. The subjects to be considered are rural morbidity and public health programs in rural areas; postgraduate medical education in rural areas and the economics of rural medicine, including the rural hospital, the rural physician and the member of a rural community. The advisory committee for the conference consists of Drs. Marion A. Blankenhorn, Cincinnati; Frank G. Boudreau, executive director, the Milbank Fund, New York; Thomas P. Farmer, Syracuse, chairman of the council committee on graduate education, Medical Society of the State of New York; Edward S. Godfrey Jr., state health commissioner, Albany; Harry S. Mustard, professor of preventive medicine, New York; Willard C. Rappleye, dean, College of Physicians and Surgeons, Columbia University, New York; Ray Lyman Wilbur, president of Stanford University; Mr. Dan D. Casement, Juniata Farm, Manhattan, Kan.; Michael M. Davis, Ph.D., chairman, committee on research in medical economics, New York; Louis I. Dublin, Ph.D., third vice president, Metropolitan Life Insurance Company, New York; Lowell J. Reed, Ph.D., dean, Johns Hopkins University School of Hygiene and Public Health, Baltimore, and Mr. Owen D. Young, chairman of the board of the General Electric Company, New York.

### New York City

**Hospital News.**—A new x-ray department was recently dedicated at Long Island College Hospital, Brooklyn, with Dr. Francis Carter Wood as the principal speaker at the ceremony. The new department, which cost \$67,000, includes a 400,000 volt roentgen therapy machine and is under the direction of Dr. Alfred L. L. Bell. It is named in honor of the late Albert L. Mason, a former president of the hospital.

**Psychologic Clinic for Policemen.**—The Patrolmen's Benevolent Association has established a psychologic clinic for policemen in difficulties, with a policeman-psychologist in charge. The New York Times reports that the clinic is an effort to prevent suicide among the men because of personal troubles. The principal causes of suicide listed are carrying life insurance beyond income allowance, buying furniture and other possessions on credit, helping needy relatives, acting as endorser for friends and relatives who fail to repay loans, gambling in the hope of paying off debts, buying too expensive a home, running up large medical bills instead of first seeking the advice of the police surgeon, entertaining beyond means, and keeping children in private schools. Plans have been made for the assistance of psychiatrists in psychiatric cases.

**WPA Workers Withdrawn from Hospitals.**—Assignments of 3,289 WPA workers in the twenty-six city hospitals were to be ended August 27 on an order from Washington closing the hospital project, the New York Times reported August 18. The order stated that employment of relief workers in jobs that should be included in the city budget could no longer be sanctioned. During the five years since the first relief workers were brought into the department their duties have come to overlap many of those of the regular employees, according to Dr. Sigismund S. Goldwater, hospital commissioner; he estimated that replacements would have to be found for at least 35 per cent of them, although the condition of city finances gave little hope of additional funds. According to WPA officials, the project saved the department of hospitals about a million dollars a year.

### NORTH CAROLINA

**Deaths from Tetanus Increase.**—Seven deaths from tetanus occurred in North Carolina during July, bringing the total of deaths for the year to twenty-three as compared with twenty-one for the entire year 1937 and twenty-nine for 1936.

**Society News.**—The Buncombe County Medical Society was addressed August 1 by Dr. Karl Schaffie, Asheville, on "The Value of Inspection in Physical Diagnosis."—Dr. Lewis W. Elias, Asheville, recently addressed the Catawba Valley Medical Society on "Colitis in Children."

**Personal.**—Dr. Joseph Lindsay Cook, Winston-Salem, assistant county health officer and medical superintendent in charge of the Forsyth County Hospital, has resigned to take charge of a syphilis control program in Guilford County.—Dr. Henderson Irwin, Eureka, was honored with a supper by citizens of the community recently on his fifty-second birthday. Six hundred persons attended. He has been in Eureka twenty-five years.

**Beauty Shop Workers Required to Have Wassermann Tests.**—The North Carolina state board of cosmetic arts examiners has announced that all new applicants for licenses to work as "beauticians" who file for the next examination in October must present certificates showing that they have had Wassermann tests. In addition, the certificate will be required of all workers who henceforth apply for renewal of licenses. When such tests are positive, the examining board may require treatment before issuing the licenses. This action was taken following a conference with the state board of health, which is working out an extensive program for the control of venereal disease.

#### NORTH DAKOTA

**Dr. Skelsey Secretary of State Society.**—Dr. Albert W. Skelsey, Fargo, was reelected secretary of the North Dakota State Medical Association at the recent meeting. Dr. William W. Wood, Jamestown, is treasurer and not secretary, as stated in a news item in THE JOURNAL, August 20, page 728.

#### OHIO

**Society News.**—Dr. Harold H. Wagner, Dayton, addressed the Greene County Medical Society in July on "Vaginal Discharge: Its Diagnosis and Treatment."—Dr. John H. Skavlem, Cincinnati, addressed the Hempstead Academy of Medicine June 13 in Portsmouth on "Tuberculous and Nontuberculous Chronic Lung Infections."

**Promotions at Cleveland.**—Among promotions on the faculty of Western Reserve University School of Medicine, Cleveland, recently announced were the following:

- Dr. Harold Feil, associate clinical professor of medicine.
- Dr. Donald M. Glover, associate clinical professor of surgery.
- Dr. Robert L. Faulkner, assistant professor of gynecology.
- Dr. Edward H. Cushing, assistant clinical professor of medicine.
- Dr. Harry Hauser, assistant professor of roentgenology.
- Dr. William C. McCally, assistant clinical professor of surgery.
- Dr. Paul G. Moore, assistant clinical professor of ophthalmology.
- Dr. Michael Paul Motto, assistant clinical professor of ophthalmology.
- Dr. Harley A. Williams, assistant clinical professor of medicine.

#### OREGON

**New Tuberculosis Hospital.**—An allotment of \$90,000 from PVA funds, combined with an appropriation by the state legislature, has assured construction of a new hospital for tuberculosis, probably to be located on the campus of the University of Oregon Medical School, Portland. This will be the third state hospital for tuberculous patients.

#### PENNSYLVANIA

**Personal.**—The Ex-Residents Association of the Harrisburg Hospital at its recent annual reunion honored Dr. John B. McAlister with a dinner celebrating the fiftieth anniversary of his internship. Judge John E. Fox of the Dauphin County Court served as toastmaster and the speakers were Drs. Henry D. Jump and David Riesman, Philadelphia; James M. H. Rowland, Baltimore, and Henry W. A. Hanson, D.D., president of Gettysburg College, Gettysburg. Dr. McAlister graduated from the University of Pennsylvania School of Medicine in 1887.

#### TENNESSEE

**Changes in Health Officers.**—Dr. W. T. Rainey, formerly of Brownsville, has been appointed health officer of Lake County, succeeding Dr. James P. Moon, Tiptonville, who, it is reported, will become a member of the unit in Dyer County. Dr. Earl P. Bowerman, Trenton, has been named health officer of Gibson County. Dr. J. W. Erwin, Savannah, health officer of Hardin County, has been appointed health officer of Giles County to succeed Dr. Wilfred N. Sisk, Pulaski, who went to Johns Hopkins University School of Medicine, Baltimore, for a course in venereal diseases.

#### TEXAS

**Personal.**—The Tarrant County Medical Society gave a barbecue and picnic recently in honor of Dr. Leopold H. Reeves, Fort Worth, president-elect of the Texas State Medical Association, at the Lake Worth home of Dr. Thomas B. Bond. Dr. Robert G. Baker, Fort Worth, presided; Drs. Ernst W. Bertner, Houston, president of the state association, and John H. McLean, Fort Worth, made addresses and Dr. Caleb O. Terrell, Fort Worth, on behalf of the society, presented a traveling bag to Dr. Reeves.

**Society News.**—The Texas Club of Internists will visit Cleveland September 6-10. A program will be presented September 6-7 at the Cleveland Clinic and September 8-10 at the Lakeside Hospital and Western Reserve University School of

Medicine.—Drs. William I. Southerland and George K. Stephens Jr., Sherman, addressed the Grayson County Medical Society, Sherman, June 14, on "Diagnosis of Heart Disease" and "Abdominal Pains in Children" respectively.—Dr. Frank Smith Hale, Houston, addressed the Jefferson County Medical Society, Port Arthur, in June on "Hydatid Mole and Chorio-Epithelioma."—At a meeting of the Taylor-Jones Counties Medical Society, Abilene, June 14, Dr. Victor E. Schulze, San Angelo, spoke on "Problems in Diabetes."—Drs. Martin H. Benson and Pauline A. Miller, Lubbock, addressed the Lubbock-Crosby Counties Medical Society in Lubbock June 7 on "Parenteral Infections Causing Diarrhea in Infants" and "Diarrhea in Infants and Young Children" respectively.

#### UTAH

**Committee on Industrial Health.**—The council of the Utah State Medical Association appointed a committee on industrial health, July 25, consisting of Drs. Oza J. LaBarge, chairman, Salt Lake City; Paul S. Richards, Bingham Canyon, and John R. Anderson, Springville.

#### WASHINGTON

**Fraternal Order Seeks to Coerce Physicians.**—At a recent state convention of the Fraternal Order of Eagles, a resolution was adopted providing that committees will call on representatives of medical organizations throughout the state to learn whether or not they will allow their members to act as physicians for the local Eagle organizations. If this procedure is disapproved by the medical societies, it is expected that the Eagles will vigorously support measures for socialization of medicine, *Northwest Medicine* reports.

#### WEST VIRGINIA

**Changes in State Health Department.**—Dr. Albert M. Price, Charleston, formerly director of county health work in the state department of health, has been appointed collaborating epidemiologist and director of the division of communicable diseases. Dr. Thomas H. Blake, Charleston, director of the division of maternal and child hygiene, succeeded Dr. Price in the county health work and Dr. Thomas W. Nale, Charleston, assistant to Dr. Blake, succeeded him.

**Society News.**—Dr. James R. Bloss, Huntington, addressed the Cabell County Medical Society, Huntington, July 21, on "Some Phases of Medical Economics."—Drs. Charles E. Conrad, Harrisonburg, Va., and Orlando S. Reynolds, Franklin, addressed the Potomac Valley Medical Society at a meeting at Thorn Spring Park near Franklin June 23 on "Pediatric Problems of Special Interest to the Practicing Physician" and "Analgesia in Labor" respectively.—Dr. Joseph H. Barach, Pittsburgh, addressed the Wetzel County Medical Society, New Martinsville, June 30, on "A Scientific Approach to the Treatment of Diabetes."

**Kanawha Society Opposes Regimentation of Physicians.**—The Kanawha Medical Society through its executive board has recorded its opposition "to any and all plans which may be presented to the congress of these United States for enactment into law which will tend toward the regimentation of the physician or the patient." A resolution expressing disapproval of the plan of action outlined at the National Health Conference at Washington, D. C., July 18-20, was adopted at a recent meeting. The resolution also reaffirmed "the traditional spirit of willingness of our profession to continue to do freely and well all proper charity work which comes to us."

#### WISCONSIN

**Personal.**—Dr. Benjamin Lieberman has resigned as director of school hygiene in the Milwaukee Health Department to become director of health service at the Milwaukee State Teachers' College.—Dr. Joseph F. Smith, Wausau, received an engraved plaque as a gift from the Ninth Councilor District Medical Society commemorating twenty-five years of service as the society's secretary. The plaque was presented at the summer meeting June 30 in Marshfield.

**District Meetings.**—At the annual meeting of the Fifth Councilor District Medical Society in Sheboygan June 30 the speakers were Drs. Paul B. Magnuson, Chicago, on medical and surgical treatment of arthritis; William F. Lorenz, Madison, on blood tests for syphilis; Walter Schiller, Chicago, cancer of the cervix, and Cleveland J. White, Chicago, who held a clinic on diseases of the skin. Drs. Willard O. Thompson, Chicago, and George R. Dunn, Minneapolis, addressed the Ninth Councilor District Medical Society June 30 on "Practical Phases of Endocrine Treatment" and "Treatment of Fractures" respectively.



## HAWAII

**Society News.**—Dr. Wilhelm Dressler, Vienna, recently lectured before the Honolulu County Medical Society on clinical cardiology, elementary and advanced electrocardiography. Dr. Albert Graeme Mitchell, Cincinnati, gave a series of refresher lectures on pediatrics under a maternal and infant hygiene program of the territorial board of health, speaking on the islands of Hawaii, Maui and Kauai as well as in Honolulu. Dr. Bruce H. Douglas, Detroit, has been in the islands during the summer making a survey of the tuberculosis situation.

## GENERAL

**Medicolegal Conference.**—The Massachusetts Medicolegal Society is sponsoring a two day conference to be held October 4-5. Physicians and lawyers interested in medicolegal work are invited to attend; registration will be requested although no fee will be charged. The tentative program covers technic and demonstrations of postmortem examinations, discussion and demonstrations of such topics as identification, finger prints, ballistics and medicolegal chemical tests, and lectures on medicolegal laws and procedures and the physician as a medical expert. Dr. William H. Watters, 270 Commonwealth Avenue, Boston, is chairman of the committee in charge of arrangements.

**Fellowships in Psychiatry.**—The National Committee for Mental Hygiene announces a group of appointments for one year's training in extramural psychiatry. Under a grant from the Commonwealth Fund the following have been appointed:

Dr. Grace E. McLean, Pilgrim State Hospital, Brentwood, N. Y., to the Cleveland Child Guidance Clinic.  
Dr. John A. Rose, Cornell University Student Health Service, to the Philadelphia Child Guidance Clinic.  
Dr. John Russell, Osawatimie (Kan.) State Hospital, to the Los Angeles Child Guidance Clinic.  
Dr. Rex E. Buxton, Iowa State Psychopathic Hospital, Iowa City, to the Judge Baker Guidance Center, Boston.  
Dr. William B. Curtis, Bellevue Hospital, New York, to the Mental Hygiene Clinic, New York.

Under local provision Dr. William L. Holt Jr., Worcester State Hospital, Worcester, Mass., was assigned to its child guidance clinic and Dr. Norman Westlund, Traverse City (Mich.) State Hospital, to the Children's Center, Detroit.

**Award in Industrial Medicine.**—At the annual meeting of the American Association of Industrial Physicians and Surgeons in Chicago in June, announcement was made of the establishment of the W. S. Knudsen Award "for the most outstanding contribution to industrial medicine." The award, a bronze plaque, is the gift of William S. Knudsen, president of General Motors Corporation, and members of the committee on award of the association include Drs. Loyal A. Shoudy, chief of medical service, Bethlehem Steel Company, Bethlehem, Pa., chairman; McIver Woody, medical director, Standard Oil Company, New York, and Clare F. N. Schram, Kingsport, medical director, Tennessee Eastman Corporation. The first award will be presented at the association's annual meeting in 1939.

**Bequests and Donations.**—The following bequests and donations have recently been announced:

Mount Sinai Hospital, New York, \$10,000 at termination of a trust established in the will of the late Mrs. Tessie K. Frank.  
Roosevelt Hospital, New York, \$5,000 by the will of the late Mrs. Elizabeth Newcomb.  
Mount Sinai Hospital, Philadelphia, \$1,000 by the will of the late Jacob Nollkin.  
St. Agnes Hospital, Philadelphia, \$500 from the estate of the late Dr. John J. Erasinger to maintain a bed for needy persons.  
Jewish Hospital, Brooklyn, \$5,000 by the will of the late Simon F. Rothschild.  
Michael Reese Hospital, Chicago, \$15,000 by the will of Dr. Emanuel Friend. At the termination of several trusts the hospital will receive funds for a convalescent home; if it does not accept the home the funds will go to the Albert Merritt Billings Hospital, Chicago.  
Jefferson Medical College, Philadelphia, will be the final beneficiary of a trust fund of \$60,000 created by the late Dr. Warren C. Batroff.  
Mount Sinai Hospital, New York, \$50,000; Beekman Street Hospital, New York, \$5,000 by the will of the late Joseph F. Cullman.  
Jewish Hospital, Brooklyn, \$15,000, and Lenox Hill Hospital, \$1,000 by the will of Mrs. Rose Abraham.

**Association for Study of Neoplastic Diseases.**—The annual meeting of the American Association for the Study of Neoplastic Diseases will be held at the Mayflower Hotel, Washington, D. C., September 8-10. The meeting will be mainly a lantern slide and x-ray film demonstration. Sessions will be devoted to the following subjects: lesions of the stomach, colon and rectum, under the chairmanship of Dr. George A. Stewart, Baltimore; lesions of the pancreas and small intestine, Dr. Janvier W. Lindsay, Washington, D. C.; endocrinology as related to neoplasia, Dr. Charles F. Geschickter, Baltimore; lesions of the oral cavity, larynx, trachea and lungs, Dr. George R. Moffitt, Harrisburg, Pa.; mediastinal

and retroperitoneal tumors, Dr. Louisa E. Keasbey, Lancaster, Pa.; lesions of the breast, Dr. John Shelton Horsley, Richmond, Va., and lesions of the bones, Dr. Ralph E. Myers, Oklahoma City. Dr. Leopold Clarence Cohn, Baltimore, is president of the association and Dr. Eugene R. Whitmore, Washington, secretary.

**Southern Tuberculosis Meeting.**—The annual meeting of the Southern Tuberculosis Conference and Southern Sanatorium Association will be held in Louisville, Ky., at the Brown Hotel September 19-21. There will be medical and nonmedical sections as well as general sessions. Among the medical speakers will be:

Dr. Frederick T. Lord, Boston, Certain Aspects of the Program in Massachusetts for the Prevention and Control of Tuberculosis.  
Dr. James Burns Amberson Jr., New York, The Future Possibilities of the Tuberculosis Problem.  
Dr. Porter P. Vinson, Richmond, Va., Tuberculous Tracheobronchitis.  
Dr. John Alexander, Ann Arbor, Mich., Role of Lobectomy and Pneumonectomy in Bronchiectasis and Carcinoma of the Lung.  
Dr. Kendall Emerson, New York, The Responsibility of the National Tuberculosis Association for State and Local Programs.

At the conference banquet Monday night the speakers will be Drs. Henry Chesley Bush, Livermore, Calif., president of the National Tuberculosis Association; Henry G. Reynolds, Paducah, Ky., president of the Kentucky State Medical Association, and Arthur T. McCormack, Louisville, president of the American Public Health Association. Dr. Paul H. Ringer, Asheville, N. C., is president of the conference and Dr. Jesse D. Riley, State Sanatorium, Ark., of the sanatorium association.

**Obstetricians, Gynecologists and Abdominal Surgeons.**—The fifty-first annual meeting of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons will be held at the Greenbrier Hotel, White Sulphur Springs, W. Va., September 22-24. Among the speakers will be:

Dr. Otto S. Krebs, St. Louis, Sterility Studies.  
Dr. Albert Mathieu, Portland, Ore., Recent Developments in Diagnosis and Treatment of Hydatidiform Mole and Chorio-Epithelioma.  
Dr. Emil Novak, Baltimore, Clinical Syndromes Referable to Disorders of Ovulation.  
Dr. Emmett D. Colvin, Atlanta, Ga., Behavior of Basal Metabolism in the Course of Developing Toxemia of Pregnancy: Correlation with Placental Infarcts and Other Significant Findings.  
Dr. Thomas R. Goethals, Boston, Management of Breech Delivery in Primiparae.  
Dr. John C. Hirst, Philadelphia, Maternal and Fetal Expectations with Multiple Pregnancy.  
Dr. Jacob P. Greenhill, Chicago, Increased Incidence of Fetal Abnormalities in Cases of Placenta Praevia.  
Drs. Virgil S. Counsellor and Nelson W. Barker, Rochester, Minn., Postoperative Thrombophlebitis: Prevention and Treatment.

The Joseph Price Oration will be delivered by Dr. Charles Burger, professor of obstetrics and gynecology, University of Budapest, Hungary. Dr. Paul Titus, Pittsburgh, president of the association, will give his official address on "Obstetrics and Gynecology as a United Specialty."

## Government Services

### Health Activities Under Social Security Act

The U. S. Public Health Service recently issued a summary of its activities during the three years since the Social Security Act became a new law, providing an annual appropriation of \$8,000,000 for the development of public health work.

Nearly 3,000 persons had received postgraduate training in public health work up to June 30, 1937, and 1,300 more have been in training in 1938. They include 651 medical officers, 162 engineers, 1,540 nurses, 451 sanitation officers, eighty-eight laboratory workers and sixty others. More than 200 medical officers had had a full year's course in public health administration. Public health nurses employed by local and state agencies increased from 16,000 to 18,000. State health departments employed 322 health nursing administrators, supervisors and consultants in 1937, compared with 149 in 1931. Six states are completely covered by full-time health officers; in some states several counties are combined into districts.

Through grants-in-aid to states, a number of specialized health activities have been developed as separate divisions of state health departments. By July 1, 1937, twenty-four states had separate divisions for venereal disease control compared with thirteen before the new law; thirty had full time and two part time officers for venereal disease control. Fifteen states now have separate divisions for industrial hygiene, compared with three prior to Jan. 1, 1936. Other separate divisions have been set up for local health administration, public health nursing, maternal and child health, dental hygiene, public health education, engineering, tuberculosis, cancer control, laboratories, malaria control and rodent plague control.

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Aug. 13, 1938.

#### New Sources of Ephedrine

Ephedrine is obtained from herbs which grow wild in China and in Spain. No ephedrine has been obtained from Spain since the civil war began, and the small district of China in which the herb grows was the scene of hostilities in the early part of the Japanese invasion, so that even the part of the crop which was not trodden under foot by the troops could not be collected. The result was that the price of ephedrine soared and a famine was threatened; but this has been averted in the following way. The drug was produced synthetically in Europe and an Indian herb which also is a source of ephedrine but had been rejected by the manufacturers because its content of ephedrine was far below that of the Chinese herb is being used. London dealers are eager to buy the Indian herb, which previously was fed to pigs. The result is that the price of ephedrine has dropped from four times the normal to only 25 per cent above it. The experimental cultivation of the herb has been begun in the British colony of Kenya by means of material supplied from the Kew botanical gardens. The cost of producing ephedrine synthetically is stated to be well above the market price of the natural product when the Chinese plant is available.

#### The Fight Against Cancer

At a meeting of the British Empire Cancer Campaign, Sir Arthur MacNalty, chief medical officer of the Ministry of Health, stated that 65,000 deaths took place annually from cancer. It had now taken the second place in the list of fatal diseases in this country. From the beginning of our national records of mortality each year had shown, almost without exception, a rise in the number of deaths from this cause. The increasing longevity of the population was an important factor, since the mortality from cancer was greater at the higher ages. Today people lived on the average fifteen years more than they did a generation ago. The ability to diagnose cancer in difficult cases had been steadily improving. The highly complex study of the causes of cancer was being carried on with great vigor throughout the world and British scientists were contributing their full share. In diagnosis and treatment the outlook was brighter than it was. In Great Britain twenty-two radium centers, which were specialized institutions both for diagnosis and for treatment, were established within recent years.

Lady Barrett (gynecologic surgeon) gave statistics of a London cancer clinic. Of patients with early cancer treated more than five years ago, 83 per cent were alive and well today. Patients treated later, when the disease was more advanced, gave a figure of 65 per cent. Of all the patients treated, 35 per cent were alive at the end of five years. These figures showed that if patients could be induced to seek treatment in the early stage there was a very good hope of complete cure.

#### Hospitals for Air Raid Casualties

The Ministry of Health is working out comprehensive plans for the hospital accommodation of air raid casualties and has issued a circular to the local authorities to the effect that every hospital must be prepared to deal with air raid casualties occurring in its immediate neighborhood. Also every hospital which is not in a specially dangerous position will be expected to receive both casualties and ordinary patients from dangerous areas. The plans which have been made would be put into

immediate operation in various parts of the country should the necessity arise. It is a shocking result of modern warfare that hospitals, formerly a refuge for the wounded, should now themselves be a dangerous place for them.

### PARIS

(From Our Regular Correspondent)

July 30, 1938.

#### Chair of Endocrinology in Collège de France

The Collège de France is an institution devoted chiefly to research in medicine and all other branches of science. Some of the most eminent men in France have been members of its faculty, which is independent of the Faculté de médecine, although both organizations form part of the University of Paris. The minister of public education has just announced the creation of a chair of endocrinology in the Collège de France and has appointed as its first occupant Professor Courier of Algiers, whose investigation of the biology of the female sex hormones in their relation to the hypophysis in 1937 was of great interest.

#### Two Eminent Teachers Become Emeritus Professors

The law which now requires the retirement of university professors at the age of 65 was modified several years ago in favor of some distinguished members of French faculties of medicine so that they would not be obliged to retire until they had reached the age of 70. This prolongation of the age of retirement enabled two Paris clinicians, well known all over the world, to continue their teaching activities until the end of the 1937-1938 school year. The two professors who have now reached the age limit are Professor Bezançon, phthisiologist, and Professor Marion, urologist. The clinics of these two teachers have been visited by many American specialists.

#### Sulfanilamide Treatment of Streptococcic Meningitis

Three papers were read at the June 17 meeting of the Société médicale des hôpitaux of Paris in which ten cases of streptococcic meningitis successfully treated with sulfanilamide were reported. In the first paper Dr. Brulé and his associates reported a case of acute optochiasmatic arachnoiditis with streptococcic meningitis, which had developed after the lesion of suppurative tonsillitis had evacuated its contents spontaneously about three weeks before the patient's admission to the hospital. During the first stage the only complaint was a severe headache. There was a slight rise of temperature, but ocular examination revealed the typical appearances of acute optochiasmatic arachnoiditis secondary to the tonsillar infection. At this time lumbar puncture showed 240 leukocytes per cubic millimeter. In the second stage (three days after admission) the symptoms and signs of diffuse meningitis became marked. Cultures of the fluid obtained by lumbar puncture showed the causative organism to be the hemolytic streptococcus. Sulfanilamide was immediately given, 65 Gm. by mouth and three intraspinal injections of 0.2 Gm. over a period of twenty-eight days. The authors expressed the opinion that the intraspinal method of administration had been more efficacious than the oral method. During the third stage a marked improvement of the arachnoiditis was noted. This is unusual, because as a rule this condition ends in complete loss of sight.

The second paper was by Dr. René Martin of the Institut Pasteur, who stated that the mortality rate of streptococcic meningitis had until recently been 97 per cent. He had given sulfanilamide to three children with the disease, all of whom recovered. In addition to these three children observed at the Institut Pasteur, three others with streptococcic meningitis of otitic origin had been successfully treated with sulfanilamide. The drug should be given in large doses and the administration continued for at least several weeks after apparent recovery to

prevent recurrences. During the first few days sulfanilamide is given both by mouth and intraspinally. For oral administration, adults are given from 8 to 10 Gm. and children 0.15 Gm. daily per kilogram of weight. On account of rapid elimination of the drug, it is advisable to give it every two hours during the day and every three hours during the night. It is given intraspinally during the first days of the illness. After from 10 to 20 cc. of spinal fluid, according to the age of the patient, has been withdrawn, an equal quantity of an 0.85 per cent solution of sulfanilamide, previously heated to body temperature on a water bath, is injected. The doses for intraspinal use are increased or decreased according to whether the concentration of the sulfanilamide in the spinal fluid is superior or inferior to 4 mg. per hundred cubic centimeters of the cerebrospinal fluid. The higher the concentration, the more rapidly does recovery take place. The permeability of the meninges toward sulfanilamide varies with each patient; hence the necessity of adjusting the doses for intraspinal use according to the concentration of sulfanilamide in the cerebrospinal fluid. Dr. Martin expressed the opinion that the administration of sulfanilamide by the intraspinal route was the chief factor in the success of the treatment in his cases of streptococcal meningitis.

The third report was submitted by Prof. Robert Debré and his associates. Before using sulfanilamide, they had observed twenty similar cases of meningitis with but one recovery. The three patients to whom they gave sulfanilamide were children 6, 4 and 9 years old and in all the meningitis was of otitic origin. These authors employed both the oral and the intraspinal method of giving the drug. For oral administration, doses as high as from 3 to 5 Gm. daily must be given even to children, and they must continue to be given for three weeks after apparent recovery. For intraspinal administration they used an 0.85 per cent solution, of which a minimum of 15 cc. should be injected if the concentration of sulfanilamide in the spinal fluid is not inferior to 4 mg. per hundred cubic centimeters. When this concentration is reached or when the spinal fluid is sterile and contains very few leukocytes, the intraspinal method is discontinued. The spinal fluid became sterile within forty-eight hours after the beginning of treatment. The complications noted, so far as the effects of the drug are concerned, were cyanosis, at times very marked at the onset but decreasing noticeably even though use of the drug was continued, a rather persistent cough and in one case a drop in the red cell count to 1,730,000.

#### BERLIN

(From Our Regular Correspondent)

July 14, 1938.

#### Blindness Defined

The National League for Industrial Employment of the Blind has established, with governmental approval, certain practical definitions of blindness, designed to facilitate classification of virtually blind persons. In addition to the totally blind, all persons are considered as blind whose central visual acuity amounts to from one fiftieth to one twenty-fifth of the normal (although most persons of the latter group are able to find their way about the streets without the help of others). Practical blindness may also be considered present even if the visual acuity is greater than one twenty-fifth of normal, in special cases, as for example if a depreciated acuity of vision is accompanied by considerable diminution of the visual field. The latter class is composed chiefly of patients who present certain disorders: optic atrophy, glaucoma, pigmental degeneration, retinal detachment, hemianopia. Further particular conditions in which blindness may be assumed are nystagmus with phantom movements of external objects perceived, nyctalopia following pathologic changes of the inner eye, and finally cases in which a full practical evaluation of central visual acuity is qualified by the advanced age of the patient.

#### Child Labor and the Protection of Youth

New legislation to regulate child labor and the working hours of adolescents went into effect April 30. The new statute, which bears the title "Youth Protection Law," embodies the following principles: Child labor is generally forbidden. The adolescent worker is protected by a curtailment of working hours and prohibition of such night work as would make excessive demands. Sufficient leisure time is assured for further vocational training, physical exercise, development of character and national political education. In addition it is provided that the adolescent worker shall have vacations and that the latter may be purposefully utilized. Any person under the age of 14 is legally considered a child. Adolescents are defined as persons over 14 but under 18 years of age. Special regulations are envisaged which apply to certain occupational fields such as domestic service, agriculture in its various branches, fishing, maritime and inland navigation, and aviation.

It was difficult to formulate a legal definition of "work," but a clear understanding of what is meant by the term is particularly important with relation to child labor. Accordingly the new law concerns not only occupation in the apprentice relationship or in the employee relationship but also those services which resemble such relationships. To avoid difficulties, it is stipulated that school children 12 years old and over may be employed at light tasks in commercial establishments and act as errand runners and as assistants in sports. So-called family industries are not exempted from the provisions of the child labor laws, so the legal protection of the child extends into this sphere. Certain exceptions are allowed under state control. Children 12 years of age and over are permitted to work under the strictest state supervision and a precise record of the hours put in is kept on a special time card. This procedure is followed even if only one child is involved. This authorized employment of children is restricted as follows: The work period must not exceed two hours daily during the school year or four hours daily during vacation. Working hours must lie between 8 a. m. and 7 p. m. but not prior to morning school hours. Time required for traveling to and from work must fall within the stipulated time limits, namely must not extend beyond 7 p. m. The law further guarantees an uninterrupted free period of at least two hours following morning school hours and a similar period of at least one hour following afternoon school hours. During school vacations the child must be permitted at least fifteen days, consecutive if possible, of absolute freedom from work. Children may not work on Sundays and holidays excepting as helpers in sports. Children may perform only certain duties such as arrangement of merchandise, and delivery and messenger services. Exceptions are permitted in the theatrical and cinema industries. Special provisions govern infant entertainers under 3 years of age. Adolescent workers may work a maximal eight hour day and forty-eight hour week. Class hours in trade schools are reckoned as a part of working time. At the close of the working day an uninterrupted rest period of at least twelve hours must be assured. Certain rest periods are required if the working hours are long. Adolescents must not as a rule be employed at night work between the hours of 8 p. m. and 6 a. m. Certain exceptions are made in the case of employees of hotels, bakeries and the theatrical and allied industries. Other exceptions with regard to night work concern industries which are worked in shifts. Adolescent workers may no longer work after 2 p. m. on Saturdays, with certain exceptions; employees of transportation services, the food industry, hairdressing industry and so on. Now for the first time employers are compelled by law to provide adolescent workers vacations with pay. Accordingly, adolescents under the age of 16 are entitled to fifteen vacation days, workers from 16 to 17 years of age are entitled to twelve days or, if part of the time is spent in a Hitler Youth Camp or excursion.

sion, to eighteen days. The new statute is implemented with extremely rigorous penalties for violation of its provisions. An unscrupulous employer who permits an employee under 18 years of age to risk serious endangerment of health from overwork is liable to a minimal jail sentence of three months.

## BUENOS AIRES

(From Our Regular Correspondent)

July 30, 1938.

### Department for Study of Allergic Diseases

A department for the study of allergic diseases, especially pollinosis, was organized some months ago in the Hospital Municipal de Vicente López in Buenos Aires. Dr. J. A. Bozzola, head of the department, made studies on the subject in the United States. He has recently made several studies on the subject in Argentina. He made determinations of the density of the pollen in the air in the various seasons of the year. He also studied the plants which produce pollen. The department has an office for consultations, a laboratory for the preparation of allergic extracts, and gardens for cultivation of plants to be used in preparing the extracts.

A new department for studies of allergic diseases is going to be opened in the near future in the Hospital de Clínicas of the Faculty of Medicine of Buenos Aires.

### Rapid Diagnosis of Diphtheria

Dr. Alfredo Sordelli, head of the Instituto Bacteriológico del Departamento Nacional de Higiene, recently presented an interesting article of his collaborator Dr. Alfredo Mansullo to the members of the Academia Nacional de Medicina. The article deals with a method for the diagnosis of diphtheria by which the diphtheria bacillus can be cultured in three hours and a macroscopic and microscopic diagnosis of the colonies made at the same time. A mixture is prepared with 15 cc. of meat broth with peptone, 1.5 cc. of defibrinated ox blood and 1.5 cc. of a 2 per cent solution of potassium tellurite. The pharyngeal exudate is collected with a cotton swab and the latter is moistened with 2 cc. of the liquid mixture, placed in a test tube and left during three hours at a temperature of from 36 to 38 C. Small characteristic black colonies can be observed in the swab at the end of three hours, when the exudate contains diphtheric bacilli. Stained preparations, growths and inoculation of guinea pigs can be done with the black colonies. Carriers of diphtheria bacilli can be detected by the technic, which makes possible the examination of hundreds of children in a single forenoon. A still more rapid method consists in moistening the pseudo-membranes with a 2 per cent solution of sodium tellurite. Ten minutes later the throat is examined. When the exudate is diphtheric the membrane has become black or gray. The results of the method were compared with those of the cultural method in the department of diphtheria of the Muñiz Hospital. In most cases of diphtheria the results of the test were positive, whereas negative results were obtained in all cases in the absence of diphtheria.

### Role of Adrenals in Hypophysial Diabetes

Investigations which have been carried on by Collip, Evans and Long have failed to produce hypophysial diabetes in normal animals. According to Houssay the failure is due to a lack of precaution, as the hypophysial glands have to be collected on solid carbon dioxide and the extracts have to be prepared and kept at a low temperature. Both the hypophysial glands and the extracts become inactive in a few hours if they are kept in a warm temperature. A hyperglycemia of from 0.15 to 0.38 per hundred cubic centimeters of blood which lasts all day may be obtained in from three to five days by using well prepared hypophysial extracts. Hyperglycemia diminished after injections of hypophysial extracts. Whenever it diminishes,

the administration of increased doses of the extract induces a new increase and later on a permanent diabetes, which persists after the injections are discontinued (Young). Houssay and his collaborators proved in 1929 and also by further studies on the subject that the resistance to insulin increases earlier than glycemia while the injections of hypophysial extracts are being given. The secretion of insulin by the pancreas is greatly diminished in animals with induced hypophysial diabetes. When diabetes of this type is permanent, the islands of Langerhans show degeneration. The theory concerning the part taken by the adrenals in transmitting the diabetogenic action of the anterior lobe of the hypophysis has been generally accepted since the reports by Long on the subject. Houssay and Biasotti in 1933 and in 1936 and Houssay and Leloir in 1935 found that the grafting of an anterior lobe of the hypophysis in toads without adrenals or pancreas and with or without a hypophysis intensifies attenuated diabetes. Houssay and Biasotti recently induced anterohypophysial diabetes in dogs. The animals were first deprived of an adrenal, then of the pancreas except for a remaining 4 Gm. of the structure, and at last of the remaining adrenal gland, after which an injection of the anterior lobe of the hypophysis was made in the peritoneum of the animals, which were maintained in the course of the experiment by means of certain doses of adrenal cortex extract, sodium citrate and sodium chloride. Hyperglycemia of 0.155, 0.175 and 0.25 was induced in dogs in this condition within three or four days of the administration of the anterohypophysial injection. Small doses of anterohypophysial extract which are not toxic may be used successfully after partial resection of the pancreas. The injections of adrenal cortex extract administered alone have no action. The results of these experiments show that the diabetogenic action of the anterior lobe of the hypophysis does not take place through the adrenals and that hypophysial diabetes can be induced in dogs which have previously been deprived of their adrenals. Adrenotrope extracts and prolactin fail to induce diabetes in dogs previously deprived of the hypophysis and of most of the pancreas. Dogs in the last mentioned condition have a normal glycemia. The administration of a dose of from 20 to 40 mg. of fresh anterior lobe of the hypophysis of bovine animals for each kilogram of body weight of the dogs induces hypophysial diabetes in the latter.

## AUSTRALIA

(From Our Regular Correspondent)

July 20, 1938.

### Health Insurance

Although there is still some anxiety among practitioners as to the effects of national insurance, the general excitement which accompanied the passage of the bill through parliament has passed, and it is now possible to review the situation more clearly. Some form of health insurance was inevitable for Australia. This country has not escaped the economic developments taking place all over the world and cannot remain blind to the fact that greater specialization in industry and the accumulation of capital in the hands of the big industrial concerns has reduced private production and greatly increased the number of wage earners in the community. Wages are cut to a minimum in the majority of cases, with the result that little provision can be made against the mischances of life or the financial stress occasioned by ill health. Unless medical services are to be put on a charitable basis, some form of compulsory insurance is necessary. At the same time "industrialization" is invading the medical field. The extensive knowledge and rapid development of medical science render specialization imperative. Moreover, overhead costs of an individual private practice, when viewed together with the decreased purchasing power of the greater part of the community, are fast becoming prohibitive. The practice of medicine is the most personal of the professions, and for this reason perhaps it has remained individual for so

long; but we have now reached a stage in the development of our society at which efficient service can best be achieved by a coordination of individual effort. Such a coordinated service is at present available to only a small section of the community.

Some reorganization of health services then is socially necessary; but whether the Australian government has provided this in the most desirable form, from the point of view either of the public or of the medical profession, is a debatable question. The bill which has just been enacted provides a general practitioner service for all wage earners whose income does not exceed £365 per annum in return for a weekly contribution shared equally by employer and employee. Provision has been made also for the voluntary inclusion of dependents of compulsory contributors. Thus over 80 per cent of the population is affected. No provision is made, however, for unemployed workers (about 5 per cent of the population) or for those small farmers and business men whose income is less than £365. Moreover, the health service provided is considered by many to be totally inadequate and to consist mainly of what the community in the past was best able to afford. Insurance makes available to contributors a general practitioner service, together with prescribed medicines, drugs and certain surgical appliances. Extra fees are payable for maternity services, major operations, laboratory tests and any specialist services. Thus the most efficient medical service still remains available to only a small section of the community.

From the point of view of the medical profession also national insurance as at present constituted is open to serious criticism. Members of the British Medical Association in Australia have clearly demonstrated that the capitation fee as originally proposed by the government is inadequate remuneration for the work it would entail. A royal commission has now been appointed by the government to investigate fully the financial aspect of the general practitioner's case. The only way in which a practitioner could maintain his present income, should the original proposals be put into operation, would be to build up a large panel. This however, has three disadvantages: he could do so only at the expense of his neighbor, at the expense of his health and at the expense of his own efficiency. The introduction of national health and pensions insurance in Australia therefore, although it will relieve the commonwealth government of a tremendous expenditure in pensions payments, has done little to provide a more efficient health service for the community as a whole.

#### Chemical Composition of Australian Foods

Until the present, those who wished to calculate the calorific equivalents, vitamin content or other quantitative aspect of diets in Australia have been restricted to figures published by American or English investigators. There have just been published, however, in the fifth report of the Commonwealth Advisory Council on Nutrition, the results of an extensive analysis of Australian foods for water, ash, protein, fat, carbohydrate and fiber content. As to calories, there are no very profound differences between Australian foods and foods overseas. The values for the protein of Australian breads (and of cereals generally) are shown to be lower than English and American figures, and meat also tends to have a low protein content in comparison. Dairy products show no appreciable differences, but the protein content of Australian vegetables and fruits is in most cases higher than that of other countries. On the basis of these analyses there has been drawn up an "economic index of foods," designed to function in times of national emergency, such as war or severe depression, which represents a compact summary of knowledge as to which foods contain the cheapest calories. Supplementary to this index is a list showing the amount of protein, fat and carbohydrate available for one penny in the case of some 214 foodstuffs. No account has been taken at this stage of mineral or vitamin content.

#### MINERAL IMBALANCE

In view of the fact that there exists in Queensland considerable evidence of a mineral imbalance in human beings, a series of analyses was carried out to determine the mineral content of some Queensland foods. The analytic results showed no especial deficiencies. While this allows attention to be paid to the question of supply and consumption, with an added sense of security, one physiologic aspect remains for consideration, and that is the question of variations in gross mineral requirements occasioned by altered habits or environments.

#### Immunity Reactions of Viruses

Dr. F. M. Burnet, whose contributions to the literature of filtrable viruses are both numerous and valuable, has carried out further research on the immunologic reactions of viruses and, in collaboration with E. V. Keogh and Dora Lush, working at the Walter and Eliza Hall Institute of Medical Research in Melbourne, has recently written a monograph on this subject. These workers consider that both plant and animal viruses can be most usefully considered as minute, organized, living microorganisms, at all events as far as the problems of immunity are concerned; and it is pointed out that, despite certain superficial differences due to the smaller size of the viruses, there is no real difference between the behavior of viruses and that of bacteria in their neutralization reactions with antisera. The study of neutralization reactions of the filtrable viruses has been difficult in the past, as titration of viruses in the living animal is at best inexact. Burnet has shown, however, that the chorio-allantoic membrane of the developing egg provides a means of virus titration of much greater accuracy than the animal, and he and his colleagues in Melbourne have made use of this method in the investigation of a number of animal viruses and their antisera.

Accumulation of data by the egg membrane technique has enabled these workers to attempt an analysis of virus neutralization reactions. They have shown that the viruses of vaccinia, influenza, louping ill, laryngotracheitis of fowls, Newcastle disease of fowls and rabbit myxomatosis conform in their reactions more or less closely to a hypothetical ideal case. This case was developed on the assumption that virus and antibody combined reversibly and that the infectivity or lack of it of a given virus particle was determined by the amount of antibody united to it at the time of effective contact with the susceptible cell. Each virus studied in detail showed some points of individuality, but all showed a general conformity with the broad outlines of the ideal case. On the basis of these data, Burnet and his co-workers have interpreted the neutralization reaction with animal-pathogenic viruses as follows: Virus inactivation by immune serum results primarily from union of antibody to the virus surface. This union is a reversible one; it takes place at a rate and reaches an equilibrium determined by the ordinary laws of reversible chemical unions. As a result of this union with antibody the virus is hindered from entering susceptible cells or from multiplying should it succeed in reaching that intracellular environment essential to its growth. Certain susceptible cells are protected against infection by lesser degrees of antibody coating on the virus particle than are required by other types of cell. It is shown also that the percentage law, discovered by Andrewes and Elford in the case of the bacteriophages, holds in the case of viruses as well, the reason for this being the relatively enormous amount of antibody to antigen in the neutralization reaction over a large range of antiserum dilutions.

Although this work has theoretical rather than directly practical significance, the monograph concludes with a consideration of the production of active immunity against virus infections. The use of living attenuated virus is held to be the method most likely to give success, the employment of killed virus being considered of little use for this purpose.



## DESTRUCTION OF RABBITS WITH VIRUS

The idea that the virus or rabbit myxomatosis might be a possible means of controlling excessive increase in wild rabbit populations is of particular interest to Australia, and the Council for Scientific and Industrial Research is carrying out extensive experiments to ascertain the infectivity of the virus for Australian wild rabbits and to confirm its noninfectivity for other domestic and native wild animals. Although the virus of myxoma has been regarded as the most species specific of all viruses, it has been found that the chorio-allantois of the developing egg is susceptible to its infection, and Burnet's egg membrane technic has offered a single and inexpensive method of quantitative study of what would otherwise be a difficult and expensive investigation. An interesting preliminary epizootologic observation in connection with rabbit myxomatosis is that the infected rabbit is shunned by his fellows. This will have an unfortunate effect in limiting the spread of the disease and will hinder the biologic control of the rabbit pest in Australia.

## BELGIUM

(From Our Regular Correspondent)

July 1, 1938.

## Poisoning from Benzene

A law was recently passed by which workers who are exposed to poisoning from benzene in the mirror industry have to report for periodic medical examination. Workers who handle or prepare varnishes which are made up with benzene or its derivatives have to report for medical examination after the first three months they are at work and at intervals of three months afterward. The examination will include counting of the erythrocytes and leukocytes. It is performed by a physician who is chosen by the manager of the industry. The intervals for medical examinations may be shortened if the physician believes it is necessary to do so. The results of the examination will be reported within two weeks to the physician appointed for the protection of workers in the given district. The latter can order discontinuation of work to persons showing symptoms of poisoning from benzene.

## Prevention of Tetanus

Mr. Renaux, in a lecture before the Société belge de médecine et de chirurgie du travail, discussed serum prevention of tetanus, certain points of which are still a subject of controversy. The injection of antitetanic serum must be administered in cases of war wounds, wounds contaminated by either the soil or feces and those in which there is a great loss of tissues. However, there are certain cases with apparent exposure of the wounded to tetanus without development of the disease. It is a daily experience to see a benign evolution of wounds which were in danger of contamination by the tetanus bacilli. The development of tetanus in so large a number of cases is exceptional in spite of the fact that the number of cases in which antitetanic serum is administered is small. This experience shows that the body has natural defenses against tetanus bacilli as well as against other bacteria. It shows also that certain general conditions are necessary for the development of tetanus. These conditions are the association of bacteria, underfeeding and depression of the individual. There are also internal and external sources of contamination. An average of from 20 to 35 per cent of persons have tetanus bacilli in the intestine. Laceration of the perineum in the course of parturition is never complicated by tetanus, although in some cases the eventuality of the contamination may have existed. The speaker feels that tetanus does not necessarily develop from contamination of wounds. He said that when the administration of antitetanic serum is indicated it is advisable to desensitize the patient who possibly previously had been given serum.

## BUDAPEST

(From Our Regular Correspondent)

July 23, 1938.

## Tropical Malaria in Hungary

In recent years tropical malaria has occurred in Hungary with fair frequency. Dr. Paul Végh, clinical assistant in Debrecen, made a special study of this disease, which in Hungary is most frequent from August to November. Last year he observed a good many cases in Debrecen. In the *Orvosi Hetilap* he says that in his cases the first attacks of fever came on after an incubation period of from four to six days. The feverish state is considerably longer than usual in tertian malaria, from thirty to thirty-six hours, and in ten to eighteen hours the pseudocritical fall of the fever can be observed. Then the maximum follows (febris tropica). In his cases the greatest difficulty in differential diagnosis was caused by abdominal typhus. All last year cases were sent to the clinic with the diagnosis abdominal typhus. The great prostration, eventually continuous fever and leukopenia remind one of typhus (the number of leukocytes in our cases was from 3,400 to 7,800). Nevertheless the characteristic monocytosis in the blood picture (from 8 to 19 per cent) should arouse suspicion of malaria, which has to be verified by microscopic examination. Treatment consisted in the administration of atabrine and plasmochin. Although the latter is fairly expensive, it has the advantage of destroying the gametes and in this way recurrences are brought to a minimum.

## Resorcinol Poisoning in an Infant

A girl baby, 2½ months old, suffering from summer diarrhea, was given resorcinol 0.05 Gm. in 120 cc. of distilled water for five days. Her condition was aggravated so that her mother took her to the clinic. The patient on admission was very restless and languid. The pulse was 120 and weak. Her lips were cyanotic. The liver was very tender on pressure and even palpation. The spleen was enlarged and painful. The blood was chocolate colored. On treatment her condition made no change to the better. The blood picture showed anisocytosis, poikilocytosis and a few erythroblasts. Suspicion of poisoning arose and the bottle containing the medicine was sent for. It was found that the bottle contained a hundred times the amount of resorcinol prescribed; that is, instead of 0.05 Gm., 5 Gm. had been given. The baby took six teaspoonfuls of the medicine, 1.5 Gm. The baby was given a copious enema, a blood transfusion, oxygen inhalations and physiologic sodium chloride and dextrose solution. The baby recovered and was dismissed from the clinic on the twelfth day after admission.

## Marriages

HOWARD W. GOURLIE, Thompsonville, Conn., to Miss Anne MacLeod of River Bennett, N. S., Canada, July 2.

ROBERT T. GRAY, Prospect, Ohio, to Miss Martha Sturgis Cohagan of Zanesville, June 6, at Columbus.

OSMYN WILLIAM MCFARLAND, Hebron, Neb., to Miss Rose Lolita Long of Baton Rouge, La., June 1.

RUDOLF WILLIAM HACK, Mokenca, Ill., to Miss Willette Mary Drummond of Chicago in July.

PETER JOSEPH PARISI, Basin, Wyo., to Miss Kathryn A. Zietzke of Whitchall, Mont., July 31.

CAMILLE-AIME ROUSSIN to Miss Hortense Olivier, both of Joliet, Que., Canada, June 18.

IVAN WARD GESSLER, McMinnville, Tenn., to Miss Vera Field of Shaw, Miss., in June.

FRANK H. GREEN JR., Rushville, Ind., to Miss Jean Green at Belmont, Mass., July 1.

HARRY GREENBAUM to Miss Sylvia Frankel, both of Jackson, Mich., June 8.

## Deaths

Dr. George E. de Schweinitz <sup>®</sup> president of the American Medical Association in 1922-1923, died at his home in Philadelphia August 22.

Dr. de Schweinitz was born in Philadelphia Oct. 26, 1858, the son of Bishop Edmund Alexander de Schweinitz and Lydia de Schweinitz. He received his A.B. and A.M. degrees from Moravian College in 1876 and his M.D. from the University



GEORGE E. DE SCHWEINITZ, M.D.  
1858-1938

of Pennsylvania in 1881. After an internship in the Children's Hospital and in the University of Pennsylvania Hospital he served as prosector of anatomy for Dr. Joseph Leidy at the University of Pennsylvania from 1883 to 1886. He also taught therapeutics in the Medical Institute of Philadelphia from 1882 to 1887. He then turned his attention to ophthalmology and became lecturer on medical ophthalmoscopy in the University of Pennsylvania in 1891-1892 and professor of ophthalmology in the Philadelphia Polyclinic and College for Graduates in Medicine, 1891-1893. He was clinical professor of ophthalmology at Jefferson Medical College, 1892-1896, and professor of ophthalmology, 1896-1902. In 1902 he became professor of ophthalmology at the University of Pennsylvania, holding this position until 1924, and then professor of ophthalmology at the Graduate School of Medicine of the University of Pennsylvania from 1924 to 1929. In 1929 he was made professor emeritus of ophthalmology. During the same period he served as consulting ophthalmologist to most of the leading Philadelphia hospitals.

Early in his career he became closely identified with the work of the profession in many different medical societies, including the Philadelphia County, Pennsylvania state and American Medical associations, the Philadelphia Pathological and Neurological societies, the American Academy of Ophthalmology and Otolaryngology and the American College of Surgeons. He was secretary of the Section on Ophthalmology of the American Medical Association in 1891-1892, and chairman, 1896-1897. He served as president of the College of Physicians of Philadelphia, 1910-1913, and of the American Ophthalmological Society, 1916. He was elected an honorary member of the Ophthalmological Society of the United Kingdom and gave the Bowman lecture in 1923. He was also a member of the French, British and Belgian ophthalmologic societies and of all international congresses. As a citizen he was prominent in many affairs, holding memberships on the boards of institutions for the blind and also of the National Institute of Social Sciences and similar groups. In 1924 he was elected a trustee of the University of Pennsylvania and was appointed chairman of its Board of Medical Affairs in 1928.

During the World War he was appointed to the Council of National Defense in 1917 and commissioned a major on April 9, 1917, being advanced to lieutenant colonel in May 1918. He was ordered to duty in the Surgeon-General's office in September 1917 and went overseas in October, remaining until March 1918. He was then returned to the Surgeon-General's office as officer in charge of ophthalmology and established the School of Ophthalmology in the Medical Officers' Training Camp at Fort Oglethorpe. At the end of the war he was appointed consultant in ophthalmology and made a member of the editorial board of the medical history of the war. In April 1919 he was commissioned colonel and in 1922 brigadier general in the Medical Reserve Corps.

Dr. de Schweinitz was widely known for his contributions to the science of ophthalmology, having devoted his research par-

ticularly to toxic amblyopias, the relation of auto-intoxication to ocular disorders, pathologic changes of various ocular diseases, relation of cerebral decompression to the cure of choked disk, ocular angiosclerosis, pathogenesis of choked disk, relation of focal infection to ocular diseases, blindness in Guernsey calves, comparative ophthalmology, ophthalmic surgery and pulsating exophthalmos. For this investigative work he achieved wide recognition. He was awarded the Leslie Dana Gold Medal in 1930 by the National Society for the Prevention of Blindness in cooperation with the St. Louis Society for the Blind. For this award he received the personal congratulations of President Herbert Hoover. He had also been called to attend Woodrow Wilson when he was President of the United States. The Howe prize medal in ophthalmology in 1927, the Huguenot Cross in 1928, the bronze plaque of the French Society for Ophthalmology in 1923, and the Alvarenga prize in 1894 were other honors to Dr. de Schweinitz.

The literary contributions of Dr. de Schweinitz included chiefly his textbook on "Diseases of the Eye," which has passed through numerous editions. Moreover, he participated in the editing and publication of seven additional textbooks in his field, and his original papers numbered hundreds.

Dr. de Schweinitz was conspicuous as a recognized leader in every activity in which he took part. He spoke with poetic and polished diction, always in behalf of the highest ideals of medical science. His manner was kindly and his presence was the personification of the dignity coupled with sincerity and humanity which are the characteristics of the truly great physician. His graciousness and nobility have been for many years a tradition among physicians.

John Martin Wheeler <sup>®</sup> New York, professor of ophthalmology at the Columbia University College of Physicians and Surgeons, New York, died, August 22, at his summer home in Underhill Center, near Burlington, Vt., aged 58. Dr. Wheeler was born at Burlington, Vt., Nov. 10, 1879. He graduated from the University of Vermont in 1902, received the medical degree in 1905 and the master of science the following year. In 1928 Dr. Wheeler was appointed professor of ophthalmology at Columbia University and in 1931 director of the Institute of Ophthalmology of the Columbia-Presbyterian Medical Center. He was a member and past president of the American Academy of Ophthalmology and Oto-Laryngology, past president of the Society of Plastic and Reconstructive Surgery, a member of the American Ophthalmological Society and a fellow of the American College of Surgeons. Dr. Wheeler was consulting ophthalmologist to the Presbyterian, Fifth Avenue and Bellevue hospitals, Neurological Institute, Sloan Hospital for Women, and New York Eye and Ear Infirmary, New York, St. Luke's Hospital, Newburgh, N. Y., and Hackensack (N. J.) Hospital. He served during the World War as a captain and later as a major. In 1936 he was presented with the Leslie Dana Gold Medal for "outstanding achievements in the prevention of blindness and the conservation of vision" by the National Society for the Prevention of Blindness in cooperation with the St. Louis Society for the Blind. He was formerly a member of the board of directors of the National Society for the Prevention of Blindness. He was awarded the honorary degree of doctor of science by the University of Vermont in 1928 and by Middlebury (Vt.) College in 1933. Dr. Wheeler was also a member of the board of trustees of the University of Vermont. He achieved world wide fame as ophthalmic surgeon in many cases affecting notable people. His research was chiefly in the field of surgical technic applied to the eye and related structures.



JOHN M. WHEELER, M.D.  
1879-1938

**Howard Moore Williamson** \* Lieut. Col., M. C., U. S. Army, Manila, P. I.; Washington University School of Medicine, St. Louis, 1915; fellow of the American College of Surgeons; served during the World War; entered the medical corps of the regular army as a first lieutenant in 1920, passing through the various grades to lieutenant colonel in April, 1938; aged 47; died, June 2, in the Sternberg General Hospital.

**McLeod Gillies**, Charleston, W. Va.; University of Manitoba Faculty of Medicine, Winnipeg, Manit., Canada, 1924; served during the World War; member of the West Virginia State Medical Association; on the staffs of the Mountain State, Kanawha Valley, St. Francis, McMillan and Staats hospitals; aged 45; died, June 21, in Baldur, Manit., of spontaneous pneumothorax of the right lung.

**Walter Karl Seelye**, Seattle; State University of Iowa College of Medicine, Iowa City, 1892; member of the Washington State Medical Association, American Academy of Ophthalmology and Oto-Laryngology and the Pacific Coast Oto-Ophthalmological Society; fellow of the American College of Surgeons; aged 70; died, June 24, of arteriosclerosis and myocarditis.

**William Edward Zilisch** \* Wausau, Wis.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; past president of the Marathon County Medical Society; on the staffs of the Wausau Memorial Hospital and St. Mary's Hospital; aged 64; died, May 1, of Parkinson's disease.

**Charles Garrard Daugherty**, Paris, Ky.; University and Bellevue Hospital Medical College, New York, 1899; member of the Kentucky State Medical Association; past president of the Bourbon County Medical Society; aged 66; on the staffs of the Massie Memorial Hospital, where he died, June 8, of hypertensive heart disease.

**George Foster Gourley**, Steubenville, Ohio; Ohio Medical University, Columbus, 1903; member of the Ohio State Medical Association and the American Academy of Ophthalmology and Oto-Laryngology; on the staffs of the Gill Memorial Hospital and the Ohio Valley Hospital; aged 59; died, June 28, of coronary thrombosis.

**Everett Nathaniel Bennett**, Kokomo, Ind.; Western Reserve University School of Medicine, Cleveland, 1915; member of the Indiana State Medical Association; on the staffs of St. Joseph and Good Samaritan hospitals; served during the World War; aged 52; died, June 2, of chronic valvular heart disease.

**George Joseph Youell**, Philadelphia; Medico-Chirurgical College of Philadelphia, 1904; during the World War was chief medical examiner for a draft board; on the staffs of the Northeastern and St. Mary's hospitals; aged 55; died, May 30, in the Fitzgerald-Mercy Hospital, Darby, Pa., of cerebral hemorrhage.

**George Oscar Switzer**, Ludington, Mich.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1881; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1897; member of the Michigan State Medical Society; aged 84; died, June 15, in the Paulina Stearns Hospital.

**John Robert Wilson** \* Bennington, Vt.; Columbia University College of Physicians and Surgeons, New York, 1905; member of the American Academy of Ophthalmology and Oto-Laryngology; aged 58; on the staff of the Putnam Memorial Hospital, where he died, June 28, of acute myocarditis and nephritis.

**John Nivison Force**, Berkeley, Calif.; University of California Medical Department, San Francisco, 1901; chairman of the department of hygiene, University of California, and for many years professor of epidemiology; aged 60; died, June 21, in a hospital at San Francisco of carcinoma of the stomach.

**Jesse Howard Robbins**, Sioux City, Iowa; Sioux City College of Medicine, Sioux City, Iowa, 1895; member of the Iowa State Medical Society; formerly county coroner; on the staff of St. Vincent's Hospital; aged 67; died, June 18, of coronary thrombosis and arteriosclerosis.

**James William Thomas**, Cross Plains, Tenn.; University of Louisville (Ky.) Medical Department, 1910; member of the Tennessee State Medical Association; aged 60; died, June 21, in a hospital at Nashville of cerebral embolism and pulmonary embolus, following a cholecystectomy.

**John Preston**, Austin, Texas; University of Virginia Department of Medicine, Charlottesville, 1872; Bellevue Hospital Medical College, New York, 1873; formerly superintendent of the State Lunatic Asylum; aged 86; died, June 27, of acute cystitis and septicemia.

**Gilce Dick Moore Lambdin**, Electra, Texas; Kansas City Medical College, 1905; member of the State Medical Association of Texas; served during the World War; formerly health officer of Chautauqua County, Kan.; aged 54; died, June 25, of lymphosarcoma.

**Chase Adam Shafer**, Chester, W. Va.; Chicago College of Medicine and Surgery, 1917; past president of the Hancock County Medical Society; on the staff of the East Liverpool (Ohio) Hospital; aged 50; died, June 26, of carcinoma of the colon.

**Robert Colwell Heflebower**, Cincinnati; Miami Medical College, Cincinnati, 1889; fellow of the American College of Surgeons; aged 72; died, June 3, in the Good Samaritan Hospital of cerebral hemorrhage, following carcinoma of the prostate.

**Lewis Henry Hector** \* Long Beach, Calif.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1905; member of the Medical Society of the State of Pennsylvania; aged 59; died, June 24, of carcinoma of the cecum.

**Thomas Sidney Whitelock Sr.** \* San Diego, Calif.; Gross Medical College, Denver, 1899; aged 75; on the staffs of the Mercy Hospital and of the Scripps Memorial Hospital, where he died, May 25, of coronary occlusion.

**William Cobb Whitfield**, Salisbury, N. C.; University of Maryland School of Medicine, Baltimore, 1884; member of the Medical Society of the State of North Carolina; aged 77; died, May 13, of cerebral hemorrhage.

**George L. Roark**, Tabor, Iowa; Northwestern University Medical School, Chicago, 1918; member of the Iowa State Medical Society; aged 57; died, June 11, of chronic valvular disease and angina pectoris.

**James Glover Tompkins**, Edgefield, S. C.; University of the City of New York Medical Department, 1883; past president of the Edgefield County Medical Society; aged 85; died, June 12, of senility.

**John Alfred Gillean**, Dallas, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1885; aged 78; died, June 8, of coronary thrombosis, prostatic hyperplasia and arteriosclerosis.

**Arlington Walton Diven**, Martins Ferry, Ohio; University of the South Medical Department, Sewanee, Tenn., 1895; formerly county coroner; aged 66; died, June 4, of bronchopneumonia.

**William H. Fuller**, Friendship, Ind.; Cincinnati College of Medicine and Surgery, 1895; aged 66; died, June 6, in a hospital at Milan, of injuries received in an automobile accident.

**Edward Russell Hanlon**, Los Angeles; Cooper Medical College, San Francisco, 1899; member of the California Medical Association; aged 61; died, June 24, of chronic myocarditis.

**Lawrence Edward Gausepohl**, St. Louis; St. Louis College of Physicians and Surgeons, 1914; aged 50; died, July 5, of edema of the brain, chronic nephritis and chronic myocarditis.

**Ira Albertum Tripp**, Cleveland; Trinity Medical College, Toronto, Ont., Canada, 1895; aged 67; died, May 30, in a local hospital of pulmonary embolism and bronchopneumonia.

**John Walton Smith**, Payette, Idaho; University of Tennessee Medical Department, Nashville, 1894; member of the Idaho State Medical Association; aged 85; died, May 19.

**James M. Hamilton**, Oakmont, Pa.; Jefferson Medical College of Philadelphia, 1876; member of the Medical Society of the State of Pennsylvania; aged 88; died, May 20.

**Edwardina M. Grant**, Cleveland; Cleveland Homeopathic Medical College, 1902; aged 74; died, June 3, of carcinoma of the colon, arteriosclerosis and carcinomatosis.

**Everett Field Darling**, New York; Columbia University College of Physicians and Surgeons, New York, 1900; aged 63; died, May 9, in St. Luke's Hospital.

**B. C. Maud Speer**, Tamaqua, Pa.; Woman's Medical College of Pennsylvania, Philadelphia, 1892; aged 73; died, May 24, in the Pottsville (Pa.) Hospital.

**Bonnard Teegarden** \* New York; Eclectic Medical College, Cincinnati, 1926; aged 35; died, June 28, in Tucson, Ariz., of coronary occlusion.

**Adelard Odilon Falardeau**, Fournier, Ont., Canada; McGill University Faculty of Medicine, Montreal, Que., 1921; aged 51; died, June 7.

**D. Roy Hunt**, Ellisville, Miss.; Memphis (Tenn.) Hospital Medical College, 1904; aged 68; died, in May.

**John G. McClellan**, Bristol, Tenn.; Eclectic Medical Institute, Cincinnati, 1889; aged 75; died, May 20.

## Correspondence

### PHYSIOLOGIC ACTION OF HYPOGLYCEMIA AND METRAZOL ON NERVOUS SYSTEM

*To the Editor:*—The investigations reported in *THE JOURNAL*, April 30, to which Favill refers in the issue of July 30, were on the physiologic action of hypoglycemia and metrazol on the central nervous system. They, together with a critical analysis of the physiologic mechanism involved in other therapeutic procedures successfully used in schizophrenia, led me to the theory that these procedures, introduced by the inventors for entirely different reasons, act by stimulating the sympathetic centers directly or indirectly. Clinical observations of Singer, the work of Hoskins and his collaborators, and that of others cited in the final paper (Gellhorn, Ernst: Effects of Hypoglycemia and Anoxia on the Central Nervous System, *Arch. Neurol. & Psychiat.* 40:125 [July] 1938) support the conclusion that the sympathetic nervous system is deficient in these patients. The observations of Petersen that an aggravation in schizophrenic symptoms is accompanied by a fall of blood pressure is in line with the argument, although Petersen admits that similar changes of blood pressure frequently occur in normal persons. Moreover, the fall of blood pressure as such may be due to many different causes and is certainly not specific for a diminution in sympathetic tone.

The mechanism by which insulin evokes a sympathetic response is well established and referred to in any textbook of physiology.

I have not added a "new" proof that schizophrenic patients have a disturbance in the sympathetic centers. But the elucidation of the essential physiologic mechanisms by which the procedures commonly used in the treatment of this disease act created a new basis for therapeutic studies of this disease through animal experimentation, although the disease itself is not reproducible in them.

I believe with Cannon (*The Pharos of Alpha Omega Alpha* 1, No. 2, 1938) "that value may follow from a polemic if the discussion is kept on a factual level."

ERNST GELPHORN, M.D., PH.D., Chicago.

### BLOOD PRESERVATION TECHNIC

*To the Editor:*—In *THE JOURNAL*, July 23, appeared an article by Bernard Fantus describing the blood preservation technic used in the Cook County Hospital. I was surprised to see that with the technic described in this article the patient does not receive pure blood but blood diluted in equal parts with sodium chloride solution. When a blood transfusion is indicated, the patient ought to get the benefit of all the vital constituents of the blood in the physiologic concentration and not a highly diluted mixture. Such dilution is entirely unnecessary if one adheres to the original technic which I described nearly twenty-four years ago (*A New and Greatly Simplified Method of Blood Transfusion*, *M. Rec.* 87:141 [Jan. 23] 1915).

I have repeatedly pointed out that unless the cannula is of proper size and is inserted properly into the vein, guaranteeing a rapid flow of the blood from the donor's vein into the glass receptacle, early stages of clotting will occur. When these few technical points are observed, dilution of the blood is absolutely unnecessary.

It is interesting to note that over twenty years ago the late Dr. Brem carried citrated blood to places seventy miles away from Los Angeles, the first practical application of the "stored blood" method. The storage of the blood originated in Russia. I think the Cook County Hospital was among the first institutions to popularize the method in this country.

While it is too early yet to pass definite judgment on the merits of the "stored blood" method, it would be unfortunate if the impression should be created that a dilution of the blood with equal parts of a sodium chloride solution was essential for the successful storage of blood. I am sure that many clinicians would object to using blood in this diluted form.

It is possible that storage of citrated blood may become very popular and be used extensively. For this reason it seemed of importance to point out that undiluted blood may be stored effectively.

Before closing I would like to suggest that the term "blood bank" which has been used for the storage of citrated blood be discarded. "Banks" are not only places of deposit but they are run for financial gain. As blood is stored in order to facilitate the technic and not for financial gain, "blood storage" or a similar term would be preferable.

RICHARD LEWISOHN, M.D., New York.

### "DEFICIENCY OF VITAMIN B AND PEDICULOSIS"

*To the Editor:*—In *THE JOURNAL* July 16, page 257, is an editorial on "Deficiency of Vitamin B and Pediculosis." The author suggests that the corroboration of this fact would be helpful. I am interested in this remark, for on June 14, 1933, I read an article before the American Medical Association in Milwaukee: "Ocular Disturbances Produced in Experimental Animals by Dietary Changes." In this article I wrote: "At the end of ten weeks, animals on this diet were unable to care for their fur and their bodies were literally covered with lice."

ARTHUR M. YUDKIN, M.D., New Haven, Conn.

### MEDICAL PORTRAITS ON STAMPS

*To the Editor:*—I was interested in the editorial in *THE JOURNAL* August 6 relative to medical portraits on stamps. I think too that we should have stamps for doctors of the United States. I am a collector of stamps relating to medicine. There has been one doctor in the United States that has been honored on a stamp, not so much because he was a good doctor but because he was a good diplomat and lawyer. Manasseh Cutler appeared on the Northwest Territory Stamp of this year. This will be found in "American History as Told by Postage Stamps," by Charles C. Gill, M.D., of Denver, and published by the *Weekly Philatelic Gossip* of Holton, Kan., page 28.

EVON WALKER, M.D., Ottumwa, Iowa.

EDITORIAL NOTE.—Manasseh Cutler was born in Killingly, Conn., in 1742, and graduated at Yale in 1765, according to the *Encyclopedia Britannica*. After being a school teacher and a merchant, and occasionally appearing in the courts as a lawyer, he decided to enter the ministry. From 1771 he was pastor of the Congregational church at what now is Hamilton, Mass. In the American Revolution he served as chaplain, thereafter supplementing his ministry by the practice of medicine and the conduct of a private boarding school. In 1786 he became interested in the settlement of Western lands, and in the following year, as agent of the Ohio Company, which he had taken a prominent part in organizing, he made a contract with Congress whereby his associates, former soldiers in the Revolutionary War and business men, might purchase 1,500,000 acres of land in the region north of the Ohio at the mouth of the Muskingum river. He also took a leading part in drafting the famous Ordinance of 1787 for the government of the Northwest Territory. From 1801 to 1805 he was a Federalist representative in Congress. A versatile man, Cutler conducted painstaking astronomical and meteorological investigations and made researches of scientific value in botany. He died in Hamilton, Mass., July 28, 1823.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### DAY BLINDNESS OR NIGHT BLINDNESS

*To the Editor:*—In the article "The Pharmacology and Therapeutics of Vitamin A," by Dr. S. W. Clausen, it is said that night blindness "occurs in various diseases of the eye such as toxic amblyopia, retinitis pigmentosa and detachment of the retina." I have been taught that toxic amblyopia is a case of day blindness and not of night blindness. Who is right?

M.D., New York.

**ANSWER.**—Duke-Elder defines night blindness as the condition in which vision in moderate illumination is good but in feeble illumination is deficient. Day blindness is a symptom showing characteristics opposite to night blindness, the patient seeing poorly in good illumination and normally in the dusk. Central vision is a function of the fovea, which part of the retina has poor powers of dark adaptation. Consequently, disease (or congenital conditions) reducing the effectiveness of the peripheral portions of the retina throws the entire weight of vision on the fovea and there results the condition known as night blindness. On the other hand, in conditions in which the fovea does not function properly, as in toxic amblyopia, central vision, which is best under good illumination, is reduced and the burden of vision is thrown on the peripheral retina, which at best has a low visual acuity.

### PHYSICAL THERAPY FOR DEEP TISSUES AND ARTHRITIS

*To the Editor:*—Which is preferable for the late treatment of injuries to the bones, muscles and ligaments—infra-red or short wave diathermy? In the use of the latter, is there any evidence to show deleterious consequence to delicate tissues, such as the eye or brain, in treating, for example, the sinuses? Which is preferable for the treatment of the pain from arthritis? It seems impossible to get anything but a "Scotch verdict" from the textbooks, and I am suspicious of the claims made by the manufacturers.

CLEMENT H. ARNOLD, M.D., Palo Alto, Calif.

**ANSWER.**—Any answers to these questions must be of a qualifying nature owing to the great multitude of factors influencing the end results of treatment. Such factors include (1) the individual reaction (idiosyncrasies of the patient), (2) the area to be treated and (3) the dosage.

While all three of these must be considered, it is the third which offers the chief difficulty in physical therapy. The dose depends almost entirely on the method of administration; different technicians differ both in technic and in judgment. X-ray therapy, in which the dosage can be quite accurately controlled, is a striking exception. In short wave diathermy, for example, the dose and the result will in part depend on the amount of current used, the size of and the distance between the electrodes and the spacing between the electrodes; i. e., the distance from the skin and, of course, the time or duration of the treatment. In the case of infra-red radiation, the dosage would depend in part on the power of the lamp, the distance from the lamp to the skin, the anatomic structure and depth of the part treated, and the duration.

In the treatment of bones, muscles and ligaments, the choice between infra-red radiation or short wave diathermy should perhaps be made on the accessibility of the part to be treated. In case the injury is comparatively superficial, infra-red may well be chosen. It is perhaps more economical, easier to manipulate, and above all easier to control and thus less dangerous. Furthermore, the part treated is more easily inspected and may, if desired, be subjected to brief intermittent massage applications during the administration of heat. The effectiveness of the treatment may also be varied by the application of counterirritants, or by wet compresses. The latter may be kept on continuously during the treatment if moist heat is desired. The compress is kept hot by the lamp, and more water is periodically poured on the cloth to replace that which evaporates. This is an effective method, for example, of keeping a continuous hot boric acid compress on open wounds.

A second and equally important, if not more important, question is How much heat should be introduced? Little or no work has been done on this all important problem. The tendency among those interested in physical therapy seems to be to concentrate on means to create higher temperatures and

then to evaluate the efficiency of an apparatus on this basis. This is to be regretted, since there appears to be no information available which indicates that it is better to treat a sprained ankle by a temperature of 106 F. than, for example, 102 or 103.

The matter of dosage (temperature and time) is also an open question. The present tendency is, it appears, to treat to the patients' tolerance, but no data which tend to support the theory that such intense doses are more desirable than some lesser ones are available.

There should be no deleterious consequences to delicate tissue, such as the eye or brain, in treating, for example, sinuses by short wave diathermy, provided the dose is kept within safe limits.

There appears to be no generally accepted physical treatment for the pain of arthritis. This is due, no doubt, to the many forms of arthritis and the difficulty of correct diagnosis.

While at present the effects of short wave diathermy are attributed solely to the heat produced, there are present, no doubt, other secondary effects from the current—effects which have not as yet been segregated satisfactorily but which, if once isolated, may prove of therapeutic significance.

### HAIRY BLACK TONGUE

*To the Editor:*—A man about 30 years of age has hairy black tongue. The case is typical and microscopic study presents numerous broken streptothrix filaments in the field. The condition is of about seven weeks' standing and is gradually becoming worse. The Wassermann reaction is negative. Oral hygiene has been carried out as well as abstinence from tobacco and also hot and acid foods. I have searched as much literature as I have at my disposal and can find no definite treatment for this condition. I would appreciate any suggestions in the way of therapy and prognosis.

CHARLES F. ENGELKING, M.D., Dalton, Ga.

**ANSWER.**—Hairy black tongue (nigrities, hyperkeratosis) is a hypertrophy of the filiform papillae of all or a portion of the medial dorsum. It usually comes on insidiously and without demonstrable cause, is asymptomatic and unimportant clinically, may remain for weeks or years, and is resistant to treatment. The failure of normal exfoliation of cellular scales results in the harboring of great numbers of bacteria in the abnormal papillary tufts. These bacteria may be staphylococci, streptococci, yeast, spore formers or Leptothrix, but when a *Penicillium* such as *Mucor niger* is present the color may be black. It is believed that this is coincidental to the coating.

Other causes of the hyperkeratosis include the use of oxidizing agents (such as sodium perborate), the presence of a hyperacidity or of a gastritis with or without hyperacidity (including neoplasm), irritating mouth washes or fever. Other possible causes of the dark coloration include silver nitrate, tannic acid, ferric chloride in the presence of blood, and dark coloring matter in medication or food.

There is no relationship between black tongue of man and that of dogs (which is caused by a vitamin deficiency).

The literature suggests the use of scrapers and salicylates to rid the tongue of the excess tissue but indicates that this is not remarkably effective.

Since the present case is not responsive to hygienic measures and is apparently complicated by the presence of a streptothrix, it is suggested that local applications of thymol or its isomer carvacrol be used. Thymol is effective against molds, is only slightly soluble in water, and is highly effective as a mouth wash in saturated solution (1:1,000).

### COLD AND HOT COMPRESSES IN CELLULITIS

*To the Editor:*—What is the rationale of cold compresses of magnesium sulfate in cellulitis? ROBERT A. ROBINSON, D.D.S., Albany, N. Y.

**ANSWER.**—Hot wet dressings produce an edema of the underlying tissues and capillary changes in the vessels with a varying amount of cellular infiltration. This may either hasten resolution or aid localization of the infection. Wet dressings are contraindicated when the tissues will not permit increased swelling without danger of spreading the infection and producing deeper involvement of tissues, cavities or fascial spaces. Under these conditions, before drainage is indicated cold compresses are desirable since they tend to lessen the congestion and also tend to relieve the pain. It is not desirable to apply constant ice cold compresses owing to danger of ischemia with lowered resistance of the tissues and also because relief of pain may delay necessary drainage.

There is often relief of pain by the cold produced by the evaporation of solutions if the dressings are not too thick. For



this purpose a 60 per cent alcohol solution or equal parts of boric acid solution and alcohol may be applied at frequent intervals.

A 25 per cent solution of magnesium sulfate probably has no advantage over boric acid solution or water, although it has an anesthetic action, but like lotion of lead and opium it is not absorbed to any appreciable extent through the unbroken skin. After incision of a suppurating area the use of a 25 per cent solution of magnesium sulfate favors relief of pain, a decrease of swelling and the separation of the necrotic tissue.

The protective and splinting action of dressings and the soothing reaction which follows the application of a cool or easily evaporating solution is often credited to the analgesic effect of some popular lotion. In acute inflammation, where increased swelling will not tend to spread the infection, and in the chronic or subacute forms hot wet dressings are usually indicated.

#### CUPPING OF NAILS IN INFANT

*To the Editor:*—I have under observation a boy baby aged 9 months. He is apparently normal in every way except for a slight cupping of his finger nails. There is a slight concavity on the exposed surface of the nails, especially pronounced on the index and middle fingers of both hands. The toe nails are slightly concave also. This nail change has become apparent only in the last two months. When the child was 3 months old he had a temperature of the type seen in tertiary malaria, reaching as high as 103.5 F. with a leukopenia of 4,000. Hemoglobin was 70 per cent. No plasmodia of malaria were found. The baby was placed on quinine sulfate and tincture of ferric chloride and within one week he was fever free. He has shown a normal weight gain throughout his life. His diet consists of pasteurized milk, Karo, egg yolk, pabulum, vegetables and cod liver oil. What dietary change might be made and what mineral or vitamin therapy would be indicated? There is no dermatologist in this vicinity.

M.D., Illinois.

*ANSWER:*—The condition described is suggestive of several conditions affecting the nails. The first possibility is a rare condition of unknown etiology known as koilonychia, or spoon nails. This is a progressive condition usually beginning in one or more fingers and extending into the others. The other possibility which must be considered is that of a postinfectious dystrophy of the nails, or onychatrophy. This condition infrequently follows a severe systemic infection or infectious disease and may be characterized by crumbling, spotting or fragility of the nails. The lapse of four months before the appearance of the cupping does not rule this out as the etiologic factor. The child apparently had a systemic disease probably grippal in character.

The treatment of this condition consists in building up the general health of the child. No mention was made of vitamin C in the diet described and if this has not been administered it should be started at once in the form of orange or tomato juice. An iron tonic should be added.

Other cereals, vegetables and liver soup, mashed ripe banana, apple sauce and baked potato should also be added gradually to the diet at this age.

The local treatment of this condition is unsatisfactory. If there is no fragility or crumbling of the nail substance, nothing needs to be done. If there should be splitting or breaking, the hands should be protected by stocking or celluloid cuffs.

#### TELANGIECTASIA AND NASAL HEMORRHAGES

*To the Editor:*—A man, aged 63, has hereditary familial telangiectasia. He has had profuse hemorrhages from the nose since the age of 20. The nasal mucous membrane shows milium telangiectatic spots as well as extensive ulcerations extending into the depths of the nose. In the past he has tried methods of increasing the coagulability of the blood such as thromboplastin, alum and snake venom. He has also used local measures, such as ice and nasal pressure. Small transfusions of from 200 to 300 cc. have erased the bleeding for several days. In spite of all these measures he still bleeds profusely and has an anemia with a hemoglobin of approximately 45 per cent. I would appreciate any help that you will offer.

BERNARD SELIGMAN, M.D., Brooklyn.

*ANSWER:*—As a rule, telangiectasia affects the vessels of the nasal septum in its cartilaginous portion and in the vast majority of cases these vessels can be destroyed by the galvanocautery. In elderly persons hypertension may be the predisposing cause of recurring hemorrhages from the septum, middle turbinate and even the antrum.

Since the usual local measures have failed and, in addition, various constitutional agents have been given without avail, it would be advisable to try radium, which may cause sufficient fibrosis to contract the offending vessels or even cause them to disappear. A capsule containing 25 mg. of radium element sheathed in thin rubber tubing is inserted into each nasal cavity at about the level of the lower border of the middle turbinate,

being kept in place by gauze packing below as well as above. The radium is left in place for four hours, making a total of 200 mg. hours administered. This dose may be repeated within two weeks without danger. The ulcers will undoubtedly heal but one will have to expect a certain amount of atrophy to take place as a result of the irradiation. It will be necessary, therefore, to keep the nasal cavities well lubricated with petrolatum or liquid petrolatum for an indefinite period. The patient should also be warned of the possibility of anosmia resulting from the atrophic changes in the mucous membrane.

#### HYPNOTICS

*To the Editor:*—Please discuss the use of hypnotic drugs not belonging to the barbituric acid or bromide groups to which there is frequent objection. What drugs would you advise for topical application to the sigmoid or rectum in ulcerated colitis?

M.D., Washington.

*ANSWER:*—There is probably no hypnotic that is entirely without disadvantage, but one of the least objectionable is carbromal (a 0.3 Gm. tablet at bedtime), which is essentially not a bromide. It may give rise to acne in persons highly susceptible to bromide. Chloral hydrate is an old reliable remedy; in a dose of 1 Gm. taken freely diluted in milk, it will compel sleep; like all other powerful hypnotics, it is habit producing and therefore should be prescribed with the necessary precaution against habituation. One such measure is to prescribe the chloral in syrup of glycyrrhiza (1 Gm. to 5 cc.) in a 100 cc. bottle, to have the patient add a teaspoonful of water for each teaspoonful of medicine he has taken. It is also well to have the patient take a dose only on those nights when he is unable to sleep and has not slept well for a night or two before. The use of all such hypnotics must be accompanied by treatment directed against the cause of the insomnia.

The kind of topical application to be used in ulcerative colitis depends on the acuteness of the condition. Only soothing applications are tolerated in the acute form and among these might be mentioned bismuth subgallate, 1 tablespoonful to 500 cc. of starch water, to be retained as long as possible and given once daily after a cleansing enema.

#### PROBABLE MENINGOVASCULAR SYPHILIS

*To the Editor:*—A Negro aged 27, whom I had the opportunity of seeing only once, had recurrent headaches for the past three months, increasingly severe, the attacks beginning in the right frontal region and spreading across the forehead, over the entire head and down the back of the neck. There is no nausea or vomiting. There have been transitory diplopia, attacks of vertigo with syncope, periodic swelling of both orbital regions, usually greater on the right, and two or three attacks of partial blindness in the right eye, no visual defects having been noted in the left eye. He has had no edema of other parts of the body or face. His past history is negative for syphilis, but a Wassermann test of the blood, taken a few weeks ago on account of persistent headache, was 4 plus. The patient has refused lumbar puncture. Urinalysis has not been done. The pulse rate is 50 and the blood pressure 150 systolic, 100 diastolic. The pulse is strong and full. The patient is in great pain but well oriented. His speech is normal. His neck is slightly stiff. The right pupil is fixed in mid-dilatation and is regular. There is a small retinal hemorrhage lateral to the disk but no papilledema. The left pupil was regular and reacted briskly to light; the left fundus was not observed satisfactorily. There was no evidence of other cranial nerve injury. Vision was not tested. General physical examination was negative. The most probable diagnosis here, I think, is acute meningovascular syphilis. But in the presence of symptoms predominant on the right side and of unilateral (right eye) abnormalities should not intracranial neoplasm also be suspected? How often does a unilateral Argyll Robertson pupil occur?

M.D., Oklahoma.

*ANSWER:*—The unilateral fixed and partially dilated pupil conforms to that seen in meningovascular syphilis. The pupil as described is not an Argyll Robertson pupil. The Argyll Robertson pupil in its narrow sense is a contracted pupil. The Argyll Robertson pupil is at times unilateral. The syphilitic pupil, corresponding to the one described, is frequently unilateral. This is referable to a lesion of the third cranial nerve. The transient attacks of diplopia may have the same basis.

In the case cited the observations given warrant the diagnosis of meningovascular syphilis. The examination of the spinal fluid would, however, be necessary to confirm the diagnosis. In the event that the spinal fluid showed no evidences of syphilis, the diagnosis of an expanding intracranial lesion would be favored. It is evident that the short duration and the progressive nature of the symptoms indicate an acute process. The spinal fluid should be strongly positive if the diagnosis of syphilis is correct. In face of the patient's refusal to have a spinal puncture, the therapeutic test with anti-syphilitic treatment may be substituted and should give rapid improvement if the diagnosis is correct.

## NEUROSYPHILIS AND DERMATITIS FROM ARSENICALS

*To the Editor:*—A woman aged 29 complained of ataxia and dizziness in July 1937. She had a vertical and lateral nystagmus, sluggishly reacting pupils, hyperactive tendon reflexes and a slight Romberg sign. The Wassermann reaction was strongly positive. She was unaware of her infection and I could not determine the date of onset. A dose of 0.25 Gm. of neoarsphenamine intravenously produced an extensive exfoliative dermatitis which took about three weeks to improve with local treatment and sodium thiosulfate. There was also considerable temporary loss of hair from the scalp. She was then put on 0.2 Gm. of thiothimol in 2 cc. of water intramuscularly twice weekly. She also received iodides to tolerance. She has had forty treatments to date and is greatly improved, but the Wassermann reaction is unchanged. Her mouth is almost endentulous and she wears dentures, but there is a tendency to stomatitis if treatment is pushed. I have not examined her spinal fluid yet, as it is probably positive and I can make little change in treatment anyway. I do not feel that I am warranted to try the arsenicals again. Could you suggest further treatment? Should I try mercury, mapharsen, tryparsamide, sulfarsphenamine or acetarsone? Are the oily bismuth preparations superior to the water-soluble ones?

M.D., Oregon.

**ANSWER.**—This patient cannot be treated intelligently without examination of the spinal fluid and without accurate neurologic and psychiatric definition of the type of neurosyphilis from which she suffers. The information given is inadequate for this purpose. If there is any serologic or psychiatric indication that she is suffering from dementia paralytica, she should immediately be treated with artificial fever, preferably by induced malaria.

Whatever type of neurosyphilis she may have, and whether fever is indicated, her treatment should certainly include the use of tryparsamide. This pentavalent arsenical drug may be safely given to patients sensitized against the arsphenamines.

No effort should be made to give the patient mapharsen, sulfarsphenamine or any other trivalent arsenical, since another attack of dermatitis will almost surely be precipitated. Acetarsone is wholly in the experimental stage in the treatment of syphilis and should not be used.

Compounds of either of the heavy metals mercury or bismuth alone, or in combination with each other, are inadequate to control neurosyphilis.

Current information as to the relative value of water soluble, oil soluble and insoluble oil suspensions of bismuth indicates that they are of approximately equal value, provided treatment is used specifically to take into account the factors of absorption and excretion. The water soluble products are absorbed and excreted so rapidly that treatment should be given either daily or every other day; the oil soluble products occupy an intermediate position and should be given twice a week; the insoluble oil suspensions are absorbed and excreted most slowly and may be given once a week.

## INSULIN FOR DIABETIC PATIENT IN CORONARY DISEASE AND PNEUMONIA—HIGH PLASMA CHOLESTEROL

*To the Editor:*—A woman, aged 60, affected by mild diabetes with fasting blood sugar 185, is on a restricted carbohydrate diet. On account of her heart condition—incipient sclerosis of the coronary arteries—it has been decided not to give insulin because of its damaging effects in these conditions. Recently she fell sick with influenza and bronchopneumonia and the problem was whether dietary rules such as the carbohydrate restriction should be disregarded during the acute illness. What can be done to lower the cholesterol content in the blood of this patient?

M.D., New York.

**ANSWER.**—Three questions are raised in this case:

1. Should the patient receive insulin? The inquirer does not say just what is meant by "incipient sclerosis of the coronary arteries." Insulin itself is not contraindicated in coronary sclerosis, although insulin reactions are dangerous. If a patient needs insulin he should receive it, but it is well to be particularly careful to keep the dose below the point at which insulin reactions may occur. If there is not much sugar in the urine, no great concern need be attached to a value of 185 mg. of sugar per hundred cubic centimeters of blood; but, if sugar is present in the urine, the patient should receive sufficient insulin to control the amount of sugar in the urine, particularly in the first specimen passed on arising.

2. How much attention should be paid to the diabetic diet during the period of an associated illness? This question arises not only in cases of infection of the upper part of the respiratory tract, as in this case, but also in such conditions as peptic ulcer and chronic ulcerative colitis. In general, it is possible to control diabetes with almost any type of diet that is necessary, and in those cases in which the diet for an associated condition is of more importance to the patient's health than the diet for diabetes the dietary regimen for diabetes should be disregarded and the diabetes should be controlled with the changed regimen. In

primers for diabetic patients, such as those written by Joslin and by Wilder, there are excellent suggestions for temporary dietary changes in cases of associated complicating illness.

3. What can be done to lower the concentration of cholesterol in the plasma? The concentration of cholesterol in this case is not stated. The relationship of plasma cholesterol and other plasma lipoids to diet has not yet been finally answered. There is strong experimental evidence that the concentration of lipoids in the plasma is definitely related to the amount of fat ingested, but almost all the studies have been made on animals, which ordinarily do not eat any fatty foods. Therefore it has been virtually impossible to reproduce these results in animals which eat a general diet such as is eaten by man. The belief in the importance of a high carbohydrate, low fat diet is subscribed to by many but is not accepted by other equally capable men; however, until this problem is settled, it probably is best to restrict the amount of fat in the diet in cases in which the concentration of lipoids in the plasma is high.

## INK AS CAUSE OF NEURITIS?

*To the Editor:*—A man aged 20, a printer for four years, uses news black and job ink, every day, made by the International Printers' Ink Corporation. Is there anything in this ink that could cause neuritis? All known tests for the cause of neuritis have been made and are negative.

ONAL A. SALE, M.D., Neosho, Mo.

**ANSWER.**—Nothing in the types of inks mentioned is known to be a source of neuritis as the sole manifestation of injurious action. In some operations connected with printing, highly repetitive, stereotyped motion conceivably might lead to a neuritis. Likewise, some chemicals that might be used, such as type cleaning fluids, might provoke a neuritis on rare occasions. At times the drying fluid used in connection with offset printing may lead to sensitization and a neuritis is not entirely impossible.

## PROBABLE DERMOID CYST OF NOSE

*To the Editor:*—A girl aged 3½ had at birth a small cyst on the middle of the bridge of the nose. This cyst contained a small amount of white, rather sebaceous, material when opened. It has not refilled and is represented at present only by a small pit or porelike depression in the skin in the bridge of the nose. What would be the best treatment for this small lesion? PHILIP T. HOLLAND, M.D., Bloomington, Ind.

**ANSWER.**—A cyst or cystlike lesion in the midline anywhere appearing at birth speaks for a developmental anomaly, most probably a dermoid cyst. At the midline of the nose it is not likely to be a branchial or thyroglossal cyst. Sebaceous cysts are not likely to occur at birth, though of course they are by no means impossible then.

It would be the conservative procedure to let this healed lesion alone, even though the present healing may be only temporary. If there should be a reactivation with refilling of the cyst, it would then be time enough to take action. The extent of the cyst wall would indicate itself better then and appropriate measures would secure its elimination.

## MISSED ABORTION

*To the Editor:*—A young married woman last October had a rather heavy period. Thereafter she missed some periods and had others scantier and shorter than normal; she had morning nausea, enlargement of the breasts and abdomen, and a gain in weight. The gain corresponded to a normal pregnancy until January; it then remained stationary for two months and then she lost 4 pounds (1.8 Kg.). From October on she had no leukorrhea, fever or chills and felt well except for backache. Early in April she had cramps and flowed heavily for three days, and the physician who examined her said she needed a curettage because of the placental tissue of a miscarriage of October had remained and that a retroverted uterus would not have permitted her to be pregnant for any long period. Please comment on this, especially as to the possibility of the placenta remaining that long without causing trouble. M.D., Iowa.

**ANSWER.**—It is difficult to make a diagnosis from the information given. The patient could have been pregnant, the embryo dying after several months' development and the expulsion failing to take place. In the so-called missed abortions all the symptoms and signs of early pregnancy are present but disappear. The uterus becomes progressively smaller. The products of conception may remain in the uterine cavity for many months without producing symptoms. As a rule, no bleeding occurs during this time. Bleeding may begin when the uterine cavity begins to evacuate its contents.

It is likewise possible that the patient was not pregnant at any time but that the amenorrhea of several months was the result of an endocrine disturbance. Sometimes a corpus luteum cyst causes a period of amenorrhea.

It is possible for a patient to continue with a normal pregnancy in a retroverted uterus. Usually the position of the uterus is corrected before the third month of gestation when the organ ceases to be confined to the pelvis but rises above the brim into the abdomen. Only rarely does abortion occur as a result of a retroposition.

If the uterus is normal in size and normal menstrual periods have returned, dilation and curettage are not indicated. On the other hand, if the patient has irregular periods of bleeding it may be well to perform this minor procedure.

#### INCUBATOR HUMIDITY

*To the Editor.*—Is the degree of humidity in the incubator for premature infants considered to be of much importance? If so, what is considered to be the proper humidity? CARL IRENEUS, M.D., Chicago.

**ANSWER.**—The degree of humidity in an incubator must, of necessity, vary, first with the size of the infant, second with the temperature of the infant, third with the temperature at which the bed is heated and fourth with the exchange of air within the bed itself. In practical experience a relative humidity varying between 40 and 50 degrees within the bed is desirable. It should be remembered that with higher temperatures the relative humidity should be lower than with a lower temperature atmosphere. A large infant furnishes more heat in a closed bed than does a small premature infant, and a patient with a high temperature and increased respiration gives off more moisture than one with normal temperature. A rapid exchange of air in the bed also tends to keep the humidity at a level more nearly that of the surrounding room temperature. With a free current of air passing in and out of the bed there is little need for concern as to the child's welfare unless the surrounding air is especially dry.

#### HYPERTROPHY OF HAIR AFTER PLASTER CAST

*To the Editor.*—What is the explanation given for hypertrophy of hair found on removal of plaster casts? M.D., New York.

**ANSWER.**—Others corroborate this observation. No controlled studies have been found bearing on the question. This leaves the explanation open to conjecture.

#### STERILIZATION OF COCAINE HYDROCHLORIDE SOLUTIONS

*To the Editor.*—In THE JOURNAL July 16 a query appears under the heading "Sterilization of Cocaine Hydrochloride Solutions." In 1886 I began using cocaine solution chiefly in surgical practice, but later on in eye operations. Learning almost at once that the solution was unstable and deteriorated rapidly, I did a lot of experimenting and found that the addition of three drops of carbolic acid to a solution of cocaine hydrochloride (of any given amount) in an ounce of distilled water not only kept it absolutely sterile but prevented decomposition and loss of anesthetic power. I used control experiments and found not the slightest change at the end of a year. I have used it extensively in eye enucleations, strabismus operations and various other operations on the eye with the most satisfactory results and entire freedom from infection. The only drawback is that the first instillation causes a little more smarting than when it is made with distilled water. Subsequent instillations are not felt. It forms a precipitate, however, with the procaine hydrochloride-sodium chloride solution of Labat and others. If the inquirer desires further information on the subject or on the preparation of homatropine, physostigmine (eserine) and the like used in eye treatments, he may be referred to the final paragraph on page 198 and to page 212 of my "Fifty Years a Country Doctor" (New York, E. P. Dutton & Co.), which was recently reviewed in THE JOURNAL. Information regarding the preservation of cocaine solutions is given there.

WILLIAM N. MACARTNEY, M.D., Fort Covington, N. Y.

#### STERILIZATION OF RUBBER GOODS

*To the Editor.*—Under the caption "Sterilization of Rubber Boots and Shoes" in THE JOURNAL, July 2, page 81, Dr. George M. Blank of Lorain, Ohio, asks for "the simplest and most effective method of sterilizing rubber boots." While I have not had occasion to sterilize rubber boots I do have occasion to use many times daily rubber apron finger coils for rectal, vaginal and other forms of physical examination. Formerly I had great difficulty in ascertaining how to sterilize as well as preserve them. About ten years ago I began to wash these rubber finger coils with running water and a hand hairbrush, and then in soap and water, and again in clear running water to wash off all the soap, and then keep them immersed in a small basin of 1:2,000 aqueous solution of mercury bichloride. This cleans and disinfects them, and the mercury solution apparently preserves the rubber so that instead of being thrown away after each use they can be used over and over again many times before showing evidence of deterioration. It is suggested that this be tried with other rubber goods and the results reported. PAUL R. STALKER, M.D., Houston, Texas.

## Medical Examinations and Licensure

### COMING EXAMINATIONS

#### STATE AND TERRITORIAL BOARDS

- ALABAMA: Montgomery, June 20-22. Sec., Dr. J. N. Baker, 517 Dexter Ave., Montgomery.
- ALASKA: Juneau, Sept. 6. Sec., Dr. W. W. Council, Box 561, Juneau.
- ARIZONA: Basic Science. Tucson, Sept. 20. Sec., Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson.
- ARKANSAS: Medical (Regular). Little Rock, Nov. 3-4. Sec., State Medical Board of the Arkansas Medical Society, Dr. L. J. Kosminsky, Texarkana. Medical (Eclectic). Little Rock, Nov. 3. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock. Basic Science. Little Rock, Nov. 7. Sec., Mr. Louis E. Gebauer, 701 Main St., Little Rock.
- CALIFORNIA: Reciprocity. San Francisco, Sept. 14, and Los Angeles, Nov. 16. Written examination. Sacramento, Oct. 17-20. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.
- COLORADO: Denver, Oct. 5-7. Sec., Dr. Harvey W. Snyder, 831 Republic Bldg., Denver.
- CONNECTICUT: Basic Science. New Haven, Oct. 8. Prerequisite to license examination. Address State Board of Healing Arts, 1895 Yale Station, New Haven. Medical (Regular). Hartford, Nov. 8-9. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. Medical (Homoeopathic). Derby, Nov. 8-9. Sec., Dr. Joseph H. Evans, 1488 Chapel St., New Haven.
- DELAWARE: Dover, July 11-13. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.
- DISTRICT OF COLUMBIA: Basic Science. Washington, Dec. 26-27. Medical. Washington, Jan. 9-10. Sec., Commission on Licensure, Dr. George C. Ruhland, 203 District Bldg., Washington.
- FLORIDA: Jacksonville, Nov. 14-15. Sec., Dr. William M. Rowlett, Box 786, Tampa.
- GEORGIA: Atlanta, Oct. 11-12. Joint Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.
- IDaho: Boise, Oct. 4-5. Commissioner of Law Enforcement, Hon. J. L. Balderston, 205 State House, Boise.
- ILLINOIS: Chicago, Oct. 18-20. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.
- INDIANA: Indianapolis, June 20-22. Sec., Board of Medical Registration and Examination, Dr. J. W. Bowers, 301 State House, Indianapolis.
- IOWA: Basic Science. Des Moines, Oct. 11. Correcs. Sec., Mr. H. W. Grefe, Capitol Bldg., Des Moines.
- KENTUCKY: Louisville, Dec. 6-8. Sec., State Board of Health, Dr. A. T. McCormack, 620 S. Third St., Louisville.
- MAINE: Portland, Nov. 8-9. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.
- MARYLAND: Medical (Regular). Baltimore, Dec. 13-16. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. Medical (Homoeopathic). Baltimore, Dec. 13-14. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.
- MASSACHUSETTS: Boston, Nov. 8-10. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 413-F State House, Boston.
- MICHIGAN: Lansing, Oct. 12-14. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-3-4 Hollister Bldg., Lansing.
- MINNESOTA: Basic Science. Minneapolis, Oct. 4-5. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. Medical. Minneapolis, Oct. 18-20. Sec., Dr. Julian F. Du Bois, 350 St. Peter St., St. Paul.
- MISSISSIPPI: Reciprocity. Jackson, December. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.
- MISSOURI: Kansas City, Oct. 18-20. State Health Commissioner, Dr. Harry F. Parker, State Capitol Bldg., Jefferson City.
- MONTANA: Helena, Oct. 4. Sec., Dr. S. A. Cooney, 216 Power Block, Helena.
- NEBRASKA: Basic Science. Lincoln, Oct. 4-5. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.
- NEVADA: Carson City, Nov. 7-9. Sec., Dr. John E. Worden, Capitol Bldg., Carson City.
- NEW HAMPSHIRE: Concord, Sept. 15-16. Sec., Board of Registration in Medicine, Dr. Fred E. Clow, State House, Concord.
- NEW JERSEY: Trenton, Oct. 18-19. Sec., Dr. James J. McGuire, 28 W. State St., Trenton.
- NEW MEXICO: Santa Fe, Oct. 10-11. Sec., Dr. Le Grand Ward, 135 Palace Ave., Santa Fe.
- NEW YORK: Albany, Buffalo, New York, and Syracuse, Sept. 19-22. Chief, Bureau of Professional Examinations, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.
- NORTH CAROLINA: Reciprocity. December. Sec., Dr. William D. James, The Hamlet Hospital, Hamlet.
- NORTH DAKOTA: Grand Forks, Jan. 3-6. Sec., Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.
- OKLAHOMA: Basic Science. Oklahoma City, Nov. 30. Sec., State, Hon. Frank C. Carter, State Capitol Bldg., Oklahoma City. Medical. Oklahoma City, Dec. 14. Sec., Dr. James D. Osborn Jr., Frederick.
- OREGON: Basic Science. Portland, Nov. 19. Sec., State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.
- PENNSYLVANIA: Philadelphia, January. Sec., Board of Medical Education and Licensure, Dr. James A. Newpher, 400 Education Bldg., Harrisburg.
- Puerto Rico: Santurce, Sept. 6-10. Sec., Dr. O. Costa Mandry, Box 3854, Santurce.
- RHODE ISLAND: Providence, Oct. 6-7. Chief, Division of Examiners, Mr. Robert D. Wholey, 366 State Office Bldg., Providence.
- SOUTH CAROLINA: Columbia, Nov. 8. Sec., Dr. A. Earle Booser, 505 Saluda Ave., Columbia.
- SOUTH DAKOTA: Pierre, Jan. 17-18. Director of Medical Licensure, Dr. B. A. Dyar, State Board of Health, Pierre.
- VERMONT: Burlington, Feb. 14. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.
- VIRGINIA: Richmond, Dec. 14-16. Sec., Dr. J. W. Preston, 30½ Franklin Road, Roanoke.
- WEST VIRGINIA: Bluefield, Oct. 31-Nov. 2. Sec., Public Health Council, Dr. Arthur E. McClue, State Capitol, Charleston.
- WISCONSIN: Basic Science. Madison, Sept. 24. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee. Medical. Madison, Jan. 10-14. Sec., Dr. Henry J. Gramling, 2203 S. Layton Blvd., Milwaukee.
- WYOMING: Cheyenne, Oct. 3 (probable date). Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

NATIONAL BOARD OF MEDICAL EXAMINERS  
SPECIAL BOARDS

Examinations of the *National Board of Medical Examiners and Special Boards* were published in *THE JOURNAL*, August 27, page 867.

## Alabama June Examination

Dr. J. N. Baker, secretary, Alabama State Board of Medical Examiners, reports the examination held at Montgomery, June 28-30, 1938. The examination covered ten subjects and included 100 questions. Twenty-nine candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Emory University School of Medicine.....	(1938)	79.5, 88, 89.4, 89.9	83.4.
University of Georgia School of Medicine.....	(1938)		86.5
Northwestern University Medical School.....	(1938)		90.7
Rush Medical College.....	(1937)	88.5, (1938)	85.7
School of Medicine of the Division of Biological Sciences.....	(1937)		92.2
Tulane University of Louisiana School of Medicine.....	(1938)	84.6, 86.7, 87.3, 88, 90.9	82.5.
Harvard University Medical School.....	(1934)	89, (1937)	92.5
Washington University School of Medicine.....	(1938)	85.4, 90.3	
Cornell University Medical College.....	(1938)	87.5, 90.6	
University of Oklahoma School of Medicine.....	(1937)		84.9
Jefferson Medical College of Philadelphia.....	(1937)		89.6
University of Pennsylvania School of Medicine.....	(1936)		89.2
University of Tennessee College of Medicine.....	(1937)		76.3
Vanderbilt University School of Medicine.....	(1938)		88
Dalhousie University Faculty of Medicine.....	(1937)		81.8
University of Western Ontario Medical School.....	(1933)		90.3

Fifteen physicians were licensed by reciprocity from May 9 through July 27. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Howard University College of Medicine.....	(1935)		Kansas
Northwestern University Medical School.....	(1934)		Ohio
University of Louisville School of Medicine.....	(1937)		Kentucky
Tulane University of Louisiana School of Medicine.....	(1934), (1935), (1936), (1937)	Louisiana	
Detroit College of Medicine and Surgery.....	(1919)		Michigan
University of Michigan Medical School.....	(1927)		Michigan
St. Louis University School of Medicine.....	(1935)		Missouri
Washington University School of Medicine.....	(1936)		Missouri
Medical College of the State of South Carolina.....	(1937)		S. Carolina
Vanderbilt University School of Medicine.....	(1932), (1935)		Tennessee
Medical College of Virginia.....	(1920)		Virginia

## Mississippi June Report

Dr. Felix J. Underwood, executive officer, Mississippi State Board of Health, reports the written examination held at Jackson, June 22-23, 1938. The examination covered twelve subjects and included ninety-six questions. An average of 75 per cent was required to pass. Thirty-two candidates were examined, thirty-one of whom passed and one failed. Sixteen physicians were licensed by reciprocity and one physician was licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Arkansas School of Medicine.....	(1938)		84.3
Emory University School of Medicine.....	(1938)		87.9
Northwestern University Medical School.....	(1938)		90.1*
University of Louisville School of Medicine.....	(1938)		90.7
Tulane University of Louisiana School of Medicine.....	(1937)		84.6.
88.4, (1938) 84.8, 87.4, 87.6, 87.9, 88.5			
University of Tennessee College of Medicine.....	(1935)		83.2.
(1937) 80, 80.1, 81, 82.7, 85.3, 85.7, 87.6, (1938) 81.7,			
82, 82.4, 83.1, 84.8, 85.4, 86.2, 89.7			
Vanderbilt University School of Medicine.....	(1938)		84.7.
84.8, 85.8, 87.3			

School	FAILED	Per Cent
Nongraduate .....		60.5†

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine.....	(1936)		Arkansas
Jenner Medical College, Chicago.....	(1902)		Texas
Tulane University of Louisiana School of Medicine.....	(1922)		Penna.
(1936) Louisiana			
University of Michigan Medical School.....	(1936)		Michigan
Creighton University School of Medicine.....	(1925)		Nebraska
Ohio State University College of Medicine.....	(1922), (1936)		Ohio
University of Cincinnati College of Medicine.....	(1917)		Ohio
University of Pittsburgh School of Medicine.....	(1931)		Penna.
Memphis Hospital Medical College.....	(1903)		Tennessee
University of Tennessee College of Medicine.....	(1928), (1933), (1937, 3)	Tennessee	

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Vanderbilt University School of Medicine.....	(1936)	N. B. M. Ex.	

\* This applicant has received the M.B. degree and will receive the M.D. degree on completion of internship. License has not been issued.

† Permitted to take the examination by special act of the legislature.

## Book Notices

*The Foundations of Nutrition.* By Mary Swartz Rose, Ph.D., Professor of Nutrition, Teachers College, Columbia University. Third edition. Cloth. Price, \$3.50. Pp. 625, with 116 illustrations. New York: Macmillan Company, 1938.

The last edition of this popular textbook was published five years ago. The author now has brought the material to date, while retaining all the charm and readability for which the earlier editions have been noted. A feature of the book is the historical treatment accorded each section. This material is written in a style which leaves the reader with a feeling that, in some way, he has been permitted a peek into the laboratories and clinics where classic researches have been developed. The book covers the entire field of nutrition. As an example of the thorough method of presenting a subject, the chapter on vitamin G can be regarded as more or less typical. In this chapter there are discussions of the discovery of vitamin G and the isolation of riboflavin, the importance of this factor in the promotion of growth and the maintenance of the health of the skin and eyes and the prevention of experimental cataract, the probable value of riboflavin in the maintenance of health and vigor of all ages and, finally, discussions of methods of measurement, food sources and requirements. The illustrations for this particular chapter include photographs of a chicken fed on a normal ration and another fed on a G-deficient diet, several charts of growth curves of rats fed on diets lacking in vitamin G, a good illustration of crystals of riboflavin, several pictures of rats showing signs of vitamin G deficiency, a curve showing the resumption of growth after a vitamin G-free diet in the rat, a picture of a turkey fed on a vitamin G-deficient diet, and showing eyelids stuck together and incrustation of the mouth and nostrils, a picture of cataract in rats, and an illustration of sixteen common foods in dishes, each food being represented by the portion that would supply approximately 50 units of vitamin G. There is a selected list of references at the end of the chapter. The same thorough treatment is given each topic. The book is copiously illustrated with well chosen charts, diagrams and reproductions of photographs. There are extensive tables of food values and other useful tables in the appendix. The book should be in the library of every person interested in foods and nutrition.

*Studies on Biological Oxidation and Some of Its Catalysts (Carboxylic Acids, Vitamin C and P, etc.).* By Albert v. Szent-Györgyi, M.D., Ph.D., Professor of Medical and Organic Chemistry, University of Szeged, Acta Litterarum ac Scientiarum Reg. Universitatis Hung. Franciscus-Josephinac, Sectio Medicorum Tome IX, Fasc. 1. Redigunt: J. Baló, D. Miskolczy et St. Rusznyák. Paper. Price, 5 marks. Pp. 98, with 12 illustrations. Leipzig: Johann Ambrosius Barth; Budapest: Eggenbergische Buchhandlung Karl Rényi, 1937.

To many persons it may have been a matter of surprise that Szent-Györgyi was awarded a Nobel prize in 1937 chiefly for his work on biologic oxidations rather than for his better known work on the isolation of vitamin C. This little volume explains how the isolation of vitamin C was, in a sense, a by-product of investigations of the as yet incompletely understood mechanism of the oxidation of foodstuffs in tissues. Szent-Györgyi, who had discovered in animal tissues the catalytic nature of those dicarboxylic acids which contain four carbon atoms, investigated also oxidation systems in plant tissues. A substance having marked reducing properties was isolated from both plant (citrus fruit juices, cabbage leaves) and animal tissue (adrenal glands). This fundamental, widely distributed reducing agent of cells, either of animals or of plants, first was called hexuronic acid. Its antiscorbutic properties were not discovered until several years later. "From the very beginning," writes Szent-Györgyi, "I suspected ascorbic acid to be identical with vitamin C but my roaming life was unsuited for vitamin tests and moreover, somehow or other, vitamins were my pet aversion. Vitamins owe their great popularity to their paradoxical behavior, making us ill if we do not eat them, while all other substances make us ill only when we do eat them. What food must contain to be wholesome is a question of primary interest to the cook rather than to the scientist. Accordingly the appreciation of results of

vitaminology are often out of all proportion to their scientific importance. Moreover, the vitamin nature of ascorbic acid could not contribute much to its real scientific interest, since its importance and presence in plant and animal tissues has been demonstrated already."

The author goes on to write: "Two years later I was condemned to be professor and sent to the chair (of biochemistry) in Szeged. At the same time fate has sent me a clever collaborator, J. L. Svirbely, who has had some experience in vitamin C tests and brought with him the conviction that my ascorbic acid could not be vitamin C. All the same I made him test my old suspicion to see whether the small quantity of powder left in the bottom of one of my tubes was not the vitamin C. In November 1931 he had definite evidence that it was. At this time also Tillmans directed attention toward the possible identity. We did not publish until we could repeat our experiment on a large number of animals. Simultaneously King and Waugh reported the isolation of crystals from lemon juice which had antiscorbutic properties and seemed to be identical with ascorbic acid, that time 'hexuronic acid.'"

The present volume is thus a personal account, projected against a background of related work by other investigators, of the researches of Szent-Györgyi, whose labors have led to such diverse results as the isolation of vitamin C and the discovery of the catalytic nature of malic, oxalo-acetic, succinic and fumaric acids.

*The Biological Standardisation of the Vitamins.* By Katharine H. Coward, D.Sc., Head of Nutrition Department, Pharmaceutical Society of Great Britain. Cloth. Price, \$4.50. Pp. 227, with 41 illustrations. Baltimore: William Wood & Company, 1938.

This book supplies, in compact and readable form, much authoritative information which should be in the hands of all persons working in the field of biologic assay of the vitamins. It should also be interesting and valuable to those concerned solely with the interpretation of the results of biologic assay. The book is divided into two parts. Part I deals with the description and evaluation of a variety of techniques proposed by different English and European investigators for the determination of vitamins A, B<sub>1</sub>, C and D in terms of international units. This section provides many such useful and practical details as suggestions for the proper management of the rat colony, principles underlying the selection of satisfactory materials for use in both test and stock diets, prevention of "refection" and the most convenient methods for administration of the minute quantities of test materials which must frequently be employed. Part II deals with the mathematical estimation of the accuracy of the results obtainable for the different vitamins. The construction and proper use of curves of reference and response are clearly described by the author, who considers these devices economical of time and labor when the determination of the exact potency of the test material in numbers of international units per gram is required. An appendix contains a reprint of the report of the second conference on Vitamin Standardisation, London, 1934, in which the International Standard materials and the international units are defined. The usefulness of the book for American workers is, however, limited by the fact that many of the techniques commonly employed by American investigators for the determination of the various vitamins are not discussed. In the United States, for example, the official methods described by the U. S. Pharmacopeia for the assay of vitamins A and D in terms of U. S. P. (equivalent to international) units differ in some respects from those used abroad. Also the methods most frequently used for the biologic assay of vitamins B<sub>1</sub> and C; i.e., the Sherman-Chase rat-growth method and the Smith rat-curative method for vitamin B<sub>1</sub> and the Sherman, LaMer and Campbell method for vitamin C, differ in considerable detail from those described by Coward. The reader must bear in mind the fact that a variety of techniques may be used for the biologic assay of vitamins in terms of international units, the chief requirement being that a simultaneous test be run on the International Standard material whenever a determination of the vitamin potency of a substance is made. American workers will find it necessary to consult other references for the technical details of methods official in the United States.

*Rancidity in Edible Fats.* By C. H. Lea, B.Sc., Ph.D. Department of Scientific and Industrial Research, Food Investigation Special Report No. 46. Paper. Price, \$1.10. Pp. 230, with 38 illustrations. New York: British Library of Information; London: His Majesty's Stationery Office, 1938.

This report is a review of the present state of scientific knowledge concerning the development of rancidity in edible fats and fat containing foods. The author defines rancidity as the deterioration in odor and flavor which develops in fats or in the fatty constituents of foods on keeping. Rancidity may occur as a result of the absorption of odors, the action of enzymes present in tissues, the action of micro-organisms, atmospheric oxidation or any combination of these. The book contains a brief but adequate discussion of each of these subjects. Methods of detecting and measuring rancidity are described. There is also a discussion of antioxidants, including the recent work of Mattill and Musher and others, and a bibliography of references to the literature. The book contains an initial chapter on the chemistry of fats and a final chapter on rancidity in dairy products and in the fat of meat. This report should prove useful to persons concerned with the preservation of foods and it is a fitting addition to the splendid monographs that have been issued under the auspices of the Food Investigation Board.

*The International Cancer Research Foundation Report of Activities During 1937.* Paper. Pp. 143. Philadelphia: The Foundation, [n. d.]

This volume summarizes the investigations assisted or supported by the foundation during 1937. It is especially interesting to those who are concerned with cancer research. Progress of each piece of work is described in full and the publications based on such work which appeared during 1937 are listed. The table of contents indicates the senior member of the research group receiving the financial help of the foundation. Financial statements indicate that the organization paid grants of more than \$400,000 during 1937. The individual problems studied by the various workers cover all aspects of cancer research and are too numerous to mention even in general classifications. The funds of the organization are not used for buildings or equipment, but the foundation can accept gifts or contributions for such expenses. Between 35 and 50 per cent of the income of the foundation must be allotted outside the United States according to the by-laws of this foundation, which was organized in Philadelphia, June 8, 1932.

*The Chicago Recreation Survey, 1937. Volume I: Public Recreation. Volume II: Commercial Recreation.* A project sponsored jointly by the Chicago Recreation Commission and Northwestern University. By Arthur J. Todd, Chairman, Department of Sociology and Anthropology, Northwestern University. In collaboration with William F. Byron, Chairman, Division of Social Work, Northwestern University. Howard L. Vlerow, Director, Chicago Recreation Survey. Conducted under auspices of the Works Progress Administration, National Youth Administration and Illinois Emergency Relief Commission. Boards. Pp. 268; 167, with illustrations. Chicago, 1937.

This voluminous report is the product of joint effort participated in by the Chicago Recreation Commission, Northwestern University, Works Progress Administration, National Youth Administration and Illinois Emergency Relief Commission. Volume I deals with public recreation, volume II with commercial recreation. In volume I will be found chapters dealing with the planning and historical aspects of public recreation, its administration, financing management, facilities, museums, forest preserves, facilities for golf and tennis, swimming, lagoons and harbors, public libraries and miscellaneous. Numerous charts, diagrams and maps in many colors illustrate and clarify the text. Tabulations abound, going into infinite detail as to numbers and character of equipment and personnel, as well as costs. Volume II deals with licensing and control of commercial recreation and with the various forms of these, such as motion picture theaters, legitimate, concert and operatic theaters, billiards and bowling establishments, baseball, basketball and football, boxing and wrestling, commercial health clubs, gymnasiums and natatoriums, horse racing, riding, polo and horse shows, bicycling and automobile racing, golf and tennis, ice sports and roller skating rinks, rental libraries, sight-seeing tours, observatories, air sight-seeing flights, excur-



sions, annual shows, conventions, radio, newspaper promotion stunts, amusement parks of every conceivable variety, ball-rooms and dancing schools, retail liquor dispensing establishments, and commercialized vice. Maps, charts and tabulations are numerous and comprehensive.

There is a tremendous amount of reference material in these volumes. The work should serve as a valuable record of conditions as they exist in 1938, and it points the way to intelligent and constructive planning for future development. The most significant correlation established in the report is one that might have been anticipated and which is shown most graphically in the maps; namely, organized vice runs parallel with poor housing, liquor establishments and commercial "recreation" of the poorer types, and absence of adequate recreational facilities of the better type.

**An Introduction to Chemistry.** By John Arrend Timm, Assistant Professor of Chemistry, Fellow of Trumbull College, Yale University. With a foreword by John Johnston, Director of Research, United States Steel Corporation. International Chemical Series, James F. Norris, Ph.D., Consulting Editor. Third edition. Cloth. Price, \$3.50. Pp. 568, with illustrations. New York & London: McGraw-Hill Book Company, Inc., 1938.

The author has attempted to stress the philosophy of chemistry. The subject matter is logically presented in a style intended for those whose main interest lies in some other field. The scientific method, chemical literature, practical applications of chemical research and the history of chemistry are elaborated only so far as these contribute toward a general education. Many modern concepts, such as acid-base theory, radiation, nuclear chemistry and vitamin chemistry, are included, together with the classic experiments and theories of chemistry. The text contains references to books and original publications for collateral reading sufficient to stimulate but not burden the reader. The book is well illustrated and clearly printed. The volume is not suited to those who seek detailed chemical information.

**Van Nostrand's Scientific Encyclopedia.** Cloth. Price, \$10. Pp. 1,234, with illustrations. New York: D. Van Nostrand Company, Inc., 1938.

A great volume of this type is an indication of the tremendous mass of scientific knowledge now assembled in many fields. In the development of this book ten contributing editors and eleven consulting editors have participated. Apparently the only physician concerned is Dr. R. Sterling Mueller, instructor in surgery in Columbia University. One finds many medical subjects rather inadequately treated. If one is to believe the initials at the end of the article on cancer, it was written by Warren K. Green, professor of astronomy at Amherst College, in collaboration with Dr. Mueller. Our absence of knowledge of certain phases of cancer would indicate that a professor of astronomy might be the ideal collaborator for such a purpose. The article dealing with carbuncles is written jointly by the geologist and the doctor because it turns out that a carbuncle is another name for a stone called a garnet. The discussion of syphilis makes no mention of the great campaign now under way in this country or of the standardized methods of treatment developed as a part of that campaign. Neither is there any reference to the gradually developing laws regulating marriage during syphilis. This volume offers sound information on most of the subjects that it discusses but not the type of information that one secures in encyclopedias in which great numbers of authorities take the responsibility for various branches of science.

**Mount Sinai Hospital, Philadelphia: Diet Manual.** Second edition. Paper. Pp. 87. Philadelphia, [n. d.].

The physician who is charged with prescribing a diet in any institution is between the difficulty of individualizing the diet for his patient and meeting the limitations set up by the needs of the occasion and the facilities of the institution. Thus it is important to have certain standards from which diets can be developed. There are a considerable number of books available which supply data concerning protein, carbohydrates and fats, mineral salts, vitamins and caloric value of ordinary portions of various foods. There are also a number of special works dealing with the development of diets for diabetic patients and those with dysentery, colitis,

epilepsy and other conditions. The diet list prepared by the Mount Sinai Hospital, Philadelphia, includes all these data in mimeographed form as well as a number of other diets which continued usage in that institution has indicated are most frequently demanded. Those wishing a standardized list of this character will find the Mount Sinai notations exceedingly practical and suggestive.

**Physicians of The Mayo Clinic and The Mayo Foundation.** Cloth. Price, \$10. Pp. 1,575, with portraits. Minneapolis: University of Minnesota Press; London: Oxford University Press, 1937.

This is the third of a series of volumes which have listed the physicians associated from time to time with the Mayo Clinic and the Mayo Foundation, providing for most of them a photograph, a brief biography and a bibliography. The volume thus constitutes an invaluable work of reference for all publishers and periodicals, since many of those concerned have made their names enviable as contributors to medical progress. The book is well arranged, nicely printed and in the mass of its material a useful work in the evaluation of the factors that make for medical success.

**Milk and Nutrition: New Experiments Reported to the Milk Nutrition Committee. Part II: The Effects of Dietary Supplements of Pasteurized and Raw Milk on the Growth and Health of School Children (Interim Report).** Paper. Price, 1s. 6d. Pp. 31. Shinfield, Reading, England: National Institute for Research in Dairying, 1938.

There are presented in this pamphlet the results of a study, conducted over a period of one school year, of the influence of milk on growth and health. The home diets of the children were not controlled. Four groups of 2,000 children each received supplements at school of, respectively, biscuits, one-third pint of pasteurized milk and two-thirds pint of either pasteurized or raw milk. It was found that the average child receiving milk grew slightly more in height and weight than the average child who did not receive supplements of milk at school. Children who received larger amounts of milk thrived somewhat better than those receiving smaller amounts. No significant difference was found with raw versus pasteurized milk. The differences between groups, however, are small, and the committee interprets this as evidence of improvements in the diets at home since Orr made his report in 1928.

**Die Hypovitaminosen: Relative Vitaminmangel-Krankheiten in der Praxis.** Von Prof. Dr. Richard Seyderhelm, Direktor der medizinischen Klinik am Hospital zum Heiligen Geist, Frankfurt a. M. Paper. Price, 8 marks. Pp. 156. Leipzig: Johann Ambrosius Barth, 1938.

Seyderhelm has produced a book which should be useful for clinicians who read German. Hypovitaminosis is considered to be either primary or secondary, primary when due to insufficient amounts of vitamins in the food and secondary when due to defective absorption or increased demands. The therapeutic use is discussed of preparations containing vitamins A, B<sub>1</sub>, riboflavin and other members of the vitamin B complex, and vitamins C and D. Brief mention is made of vitamins E and P. A list of commercial vitamin preparations is provided. There is also a short table of foods which are useful as sources of the vitamins.

**Artificial Light and Its Application.** Commercial Engineering Department, Westinghouse Lamp Division, Westinghouse Electric & Manufacturing Company. Paper. Price, 75 cents. Pp. 258, with illustrations. Bloomfield, New Jersey, [n. d.].

This planographed report is an extensive discussion of artificial light and its application. There are chapters dealing with light sources, with "the language of lighting," photometry, light and vision, color, light control and lighting equipment, interior lighting design, industrial lighting, school lighting, commercial and public building lighting, display lighting, home lighting, farm lighting, floodlighting, recreational and sports lighting, architectural lighting, electrical advertising, street lighting and highway lighting, and lighting in the theater. The list of topics will suggest the wide range of interests to which this report should appeal. To the ophthalmologist, the physician who is a member of the school board, the school physician and the school administrator, the chapters dealing with light and vision and the lighting of school rooms should be especially useful, as should the discussion of photometry. The report is comprehensive and detailed, liberally illustrated with

photographs and diagrams, and accompanied by extensive tables, charts and plans for the application of artificial light under virtually every conceivable set of circumstances from the feed alley in a horse barn to the majestic façade of a governmental building. The Better Light-Better Sight activity of recent date, which has sharpened interest in the subject of lighting and its relation to vision, and the consequent stimulus to interest in sight conservation, should create a demand for information which this book is admirably calculated to supply. Reports of this character are an example of how industries may furnish valuable contributions to health and welfare while at the same time promoting their own commercial interests.

**Petting-Wise or Otherwise?** By Edwin Leavitt Clarke. Paper. Price, 25 cents. Pp. 32. New York: Association Press, 1938.

For patients who prefer to take their sex education with a sugar coating, this pamphlet may be recommended as far as it goes. The information is conveyed through recital of the conversation between two young persons, married and engaged in campus leadership activities, and an older married couple, both physicians, during a call by the former at the home of the latter. Like all writing in this field which singles out one phase of the sex question, such as masturbation or petting, it suffers from lack of balance, in that it does not tell the whole story. What it does tell is sound and adequate, though the technic renders it much more wordy than would have been necessary to convey the information in simple straightforward style. The persistence of this style of writing about sex seems to be an indication that not all readers are willing to take their facts straight, a fact which might be commended to the attention of supermodern writers who are not content to call a spade a spade but must add details.

**Keesing's Medical Digest, January 1—March 31, 1938.** Fabrikoid. Subscription price, £1.5s. per annum. London: Keesing's Medical Digest, Ltd., 1938.

This small book has a calendar on the first page, followed by two vacant pages for telephone numbers and ninety-six pages of abstracts of articles published recently in various medical journals. Then follow many blank pages on which the physician may record his visiting list, with a few pages to record obstetric engagements, adjacent to the dates of the last menstruation, first fetal movements, and when labor is expected. The last pages also are blank to record the amount of cash receipts. The book is of the loose leaf type, fitting between spring covers which, when sprung backward, permit the easy removal of all the contents and its replacement with new material.

**On Thought in Medicine (Das Denken in der Medizin).** By Hermann von Helmholtz. An Address delivered August 2, 1877, on the Anniversary of the Foundation of the Institute for the Education of Army Surgeons. Introduction by Arno B. Luckhardt. [Reprinted from *Bulletin of the Institute of the History of Medicine*, Vol. VI, No. 2, February, 1938.] Boards. Price, 75 cents. Pp. 27, with portrait. Baltimore: Johns Hopkins Press, 1938.

In 1877 von Helmholtz delivered an address on the anniversary of the foundation of the Institute for the Education of Army Surgeons. In his introduction to the reprinting of this address Professor Luckhardt indicates that universality is proved by the fact that this same address might well have been written to meet conditions in the world within the last few years. The essay "On Thought in Medicine" is a recapitulation of medical theories of the past and a demand for scientific evidence from the laboratory and the clinic as the basis for medical progress.

**Leaves from a Surgeon's Case-Book.** By James Harpole. Cloth. Price, \$2.75. Pp. 300. New York: Frederick A. Stokes Company, 1938.

The title almost expresses the character of this volume. It is written by a surgeon under a non de plume and is essentially a collection of anecdotes from medical practice, offering for the lay reader in this way educational material in an easily absorbable medium. There is not a sustained interest throughout the book but the casual reader will find that it offers so much of interest that he is likely to proceed gradually throughout the entire volume.

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Workmen's Compensation Acts: Death of Physician from Pneumonia Compensable.**—The claimant's husband was surgeon-in-chief of the defendant hospital. On Jan. 29, 1933, at 12:30 a. m., he responded to an emergency call from the hospital. The weather was cold and windy, with snow and rain falling intermittently. The patient was found to be in an extremely critical condition, because of a bad fracture of the skull and a broken leg. According to the custom of the hospital, an incoming patient is observed in the dispensary, located in the basement, and if surgical attention is required he is removed to the operating room on the top floor of the hospital, unless the injury is of a very minor nature. The claimant's husband, evidently concluding that an immediate operation was necessary and that the patient should not be subjected to any avoidable disturbance, performed a major operation on the patient in the dispensary. The room temperature there was abnormally low, estimated as between 40 and 50 degrees. Although the physician, in the course of the operation requiring about an hour, had donned an extra gown, he had a severe chill. When the operation was completed, he was placed in a bed in the hospital and kept there the rest of the night. On January 31, in accordance with plans he had made, he started on a vacation but was taken ill en route and died in a hospital, February 28, "of influenza pneumonia and attending complications." The claimant sought compensation under the workmen's compensation act of Pennsylvania. The referee found that the death was the result of an accidental injury and awarded compensation, the award being affirmed by the workmen's compensation board. The court of common pleas reversed the finding of the board, and the claimant appealed to the superior court of Pennsylvania.

A nurse who assisted in the operation testified that she noticed that the physician's shoes and the bottom of his trousers were wet and that he told her "his car got stuck in the snow, in the slush, on the way up and he had to shovel his way out." The admission of this testimony was objected to on the ground that it was hearsay. Declarations of an injured person, said the court, made at or so near the scene of the accident and so shortly after it happened as to preclude the presumption that they were the result of premeditation or design are generally held to be admissible. Here the evidence did not warrant the slightest suspicion that the physician's statement was uttered with premeditation or with an ulterior purpose in mind. While it did not definitely appear, the court thought it could be reasonably assumed that a very brief time intervened between the physician's departure from home and his arrival at the hospital and that the statement was made to the first person he met. Furthermore, in the court's opinion the proof of an accidental injury did not depend entirely on the nurse's alleged hearsay testimony; there was competent evidence that she saw the physician's wet clothing. Owing to the inclement weather, with "awful driving conditions," it could readily be inferred from what the nurse observed that something of an unusual nature had happened to the physician on his way to the hospital. It was entirely safe to say that, in the ordinary course of events, a surgeon does not go to a hospital where he is to operate, with wet trousers and shoes. If such a thing occurs, one naturally concludes that he had some unusual experience.

Direct evidence of the cause of the physician's wet clothing was not necessary; it could be established by circumstantial evidence. Here, the court said, the physician met with an accident before he entered the dispensary. In view of the patient's critical condition, prompt action was evidently necessary. The humanitarian endeavor to save the life of a person who was so seriously injured could not be regarded in any other sense than one of absolute necessity, and not as a voluntary act performed under usual conditions. If pneumonia is contracted

by exposure to cold or water, under conditions which usually prevail, the general rule is that it is not compensable. On the other hand, if one is exposed in the course of his employment to unusual conditions, and pneumonia results therefrom, there is an accidental injury. The court thought it unnecessary to discuss the medical testimony but expressed the view that it was sufficient to establish the causal connection between the accident and the death. The proof of a wetting established a mishap—an untoward event, which was the super-inducing cause of death. It was followed by exposure in an unusually cold room, where at that time it was vitally necessary for the physician in the course of his employment to perform an operation. The facts, in the opinion of the court, were sufficient to support the finding of the referee that there was an accidental injury within the meaning of the workmen's compensation act. The judgment of the court below was therefore reversed and the record remitted with directions for a judgment to be entered on the findings and conclusions of the workmen's compensation board.—*Roth v. Locust Mountain State Hospital (Pa.)*, 196 A. 924.

**Basic Science Acts: Health Lecturer Practices the Healing Art.**—The defendant, Vivi Ann Mielke, also known as Vivi Ann Wyntor, was charged with practicing healing without a valid certificate of registration in the basic sciences. The trial court certified to the Supreme Court of Minnesota the following question: "Does the amended information as filed charge a public offense under the Basic Science Act of the State of Minnesota as set out in section 5705-1 et seq., Mason's Minnesota Statutes for the year 1927?"

The amended information charged the defendant with advertising herself as an assistant and staff lecturer for an osteopath of Kansas City and that she would give free daily lectures at specified times in a hotel in St. Paul. During the lectures the defendant solicited women present to attend a lecture course which was to follow immediately, for which a fee was charged. A number of women attended and paid the fee, and during the lectures certain products or concoctions were described by the defendant and their uses and values discussed. Circulars were distributed by and under the direction of the defendant which further described the products. It was announced, during the lectures, that the defendant had such products for sale and she suggested and recommended their purchase by the hearers. From the sales the defendant derived a commission of 55 per cent, the remainder going to the Kansas City osteopath, who held no license to practice healing in Minnesota. Among the products offered for sale were certain tablets claimed to contain red bone marrow and spleen and labeled "Useful in Secondary Anemia." The defendant also was charged with having sold female hormone tablets in connection with her lectures.

The basic science act of Minnesota, said the Supreme Court, forbids the practice of healing without first having obtained a certificate of proficiency in the basic sciences. By the terms of the act the basic sciences are defined to include anatomy, physiology, pathology, bacteriology, hygiene and chemistry so far as they relate to the human system or mind. The practice of healing is defined as including any person who shall in any manner for fee, gift, compensation or reward, or in expectation thereof, engage in the diagnosis, analysis, treatment, correction or cure of any disease, injury, defect, deformity, infirmity, ailment or affliction of human beings, or who for any fee suggests, recommends or prescribes any medicine or cure thereof. The defendant did not attack the constitutionality of the basic science act but asserted that as it applied to her or to the acts charged against her it infringed on her constitutional rights and that there was no relation between the requirements of the basic science act and the protection of the public as applied to her situation. With this contention, however, the Supreme Court disagreed. It is essential to the public health and safety, the court pointed out, that persons who, for compensation, suggest, recommend or prescribe medicine or treatment for the correction or cure of human ailments have a basic understanding of the subjects required by the basic science act. It is within the police power of the state so to require. According to the information lodged against

her, the court continued, the defendant induced women to come to lectures for which she charged a fee and for those who had menstrual troubles she suggested and recommended tablets which she had for sale for correction and cure of their affliction. Her conduct, therefore, came squarely within the basic science act. The requirements of that act are germane to the safety and health of the public in the treatment of such ailments as those for which the defendant sold and recommended her tablets and medicines. Such being the case, no constitutional right of the defendant was infringed on.

In the opinion of the Supreme Court, therefore, the question certified by the trial court should be answered in the affirmative.—*State v. Mielke (Minn.)*, 277 N. W. 420.

**Dental Practice Acts: Board Exercises Administrative Functions in Revoking License.**—A state board of dental examiners, said the district court of appeal, first district, division 1, California, exercises discretionary administrative functions, not judicial functions, in revoking licenses to practice dentistry. Neither a writ of prohibition nor a writ of certiorari, therefore, may be utilized to obtain a court review of a revocation order.—*Jacobs v. Board of Dental Examiners (Calif.)*, 75 P. (2d) 96.

## Society Proceedings

### COMING MEETINGS

- Academy of Physical Medicine, Washington, D. C., Oct. 24-26. Dr. Herman A. Osgood, 144 Commonwealth Ave., Boston, Secretary.
- American Academy of Ophthalmology and Oto-Laryngology, Washington, D. C., Oct. 9-14. Dr. William P. Wherry, 107 South 17th St., Omaha, Executive Secretary.
- American Association for the Study of Goiter, Washington, D. C., Sept. 12-14. Dr. W. Blair Mosser, 133 Biddle St., Kane, Pa., Secretary.
- American Association for the Study of Neoplastic Diseases, Washington, D. C., Sept. 8-10. Dr. Eugene R. Whitmore, 2139 Wyoming Ave. N.W., Washington, D. C., Secretary.
- American Association of Obstetricians, Gynecologists and Abdominal Surgeons, White Sulphur Springs, W. Va., Sept. 22-24. Dr. James R. Bloss, 418 Eleventh St., Huntington, W. Va., Secretary.
- American Association of Railway Surgeons, Chicago, Sept. 19-21. Dr. Daniel B. Moss, 547 W. Jackson Blvd., Chicago, Secretary.
- American College of Surgeons, New York, Oct. 17-21. Dr. George W. Crile, 40 East Erie Street, Chicago, Chairman, Board of Regents.
- American Congress of Physical Therapy, Chicago, Sept. 12-15. Dr. Richard Kovacs, 1100 Park Ave., New York, Secretary.
- American Hospital Association, Dallas, Texas, Sept. 26-30. Dr. Bert W. Caldwell, 18 East Division St., Chicago, Executive Secretary.
- American Public Health Association, Kansas City, Mo., Oct. 25-28. Dr. Reginald M. Atwater, 50 West 50th St., New York, Executive Secretary.
- American Roentgen Ray Society, Atlantic City, N. J., Sept. 20-23. Dr. Carleton B. Peirce, University Hospital, Ann Arbor, Mich., Secretary.
- Associated Anesthetists of the United States and Canada, New York, Oct. 17-21. Dr. F. H. McMechan, 318 Hotel Westlake, Rocky River, Ohio, Secretary General.
- Association of Military Surgeons of the United States, Rochester, Minn., Oct. 13-15. Dr. H. L. Gilchrist, Army Medical Museum, Washington, D. C., Secretary.
- Central Association of Obstetricians and Gynecologists, Minneapolis, Oct. 6-8. Dr. William F. Mengert, University Hospitals, Iowa City, Secretary.
- Clinical Orthopedic Society, Nashville, Tenn., and Birmingham, Ala., Oct. 7-8. Dr. H. Earle Conwell, 215 Medical Arts Bldg., Birmingham, Ala., Secretary.
- Colorado State Medical Society, Estes Park, Sept. 7-10. Mr. Harvey T. Sethman, 537 Republic Bldg., Denver, Executive Secretary.
- Delaware Medical Society of Dover, Oct. 10-12. Dr. Allan V. Gilliland, Smyrna, Secretary.
- Idaho State Medical Association, Sun Valley, Sept. 6-10. Dr. Harold W. Stone, 105 North Eighth St., Boise, Secretary.
- Indiana State Medical Association, Indianapolis, Oct. 4-6. Mr. Thomas A. Hendricks, 23 East Ohio St., Indianapolis, Executive Secretary.
- Kentucky State Medical Association, Louisville, Oct. 3-6. Dr. Arthur T. McCormack, 620 South Third St., Louisville, Secretary.
- Michigan State Medical Society, Detroit, Sept. 19-22. Dr. L. Fernald Foster, 311 Center Ave., Bay City, Secretary.
- Mississippi Valley Medical Society, Hannibal, Mo., Sept. 28-30. Dr. Harold Swanberg, 510 Main St., Quincy, Ill., Secretary.
- Nevada State Medical Association, Reno, Sept. 23-24. Dr. Horace J. Brown, 120 N. Virginia St., Reno, Secretary.
- Omaha Mid-West Clinical Society, Omaha, Oct. 24-28. Dr. J. D. McCarthy, 107 South 17th St., Omaha, Secretary.
- Pacific Association of Railway Surgeons, Los Angeles, Oct. 7-8. Dr. W. T. Cummins, Southern Pacific General Hospital, San Francisco, Secretary.
- Pennsylvania Medical Society of the State of Scranton, Oct. 3-6. Dr. Walter F. Donaldson, 500 Penn. Ave., Pittsburgh, Secretary.
- Vermont State Medical Society, Burlington, Oct. 6-7. Dr. B. F. Cook, 154 Bellevue Ave., Rutland, Secretary.
- Virginia Medical Society of Danville, Oct. 4-6. Miss Agnes V. Edwards, 1200 East Clay St., Richmond, Secretary.
- Wisconsin State Medical Society of Milwaukee, Sept. 14-16. Mr. J. G. Crownhart, 119 East Washington Ave., Madison, Secretary.

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1928 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

#### American Journal of Clinical Pathology, Baltimore

S: 383-470 (July) 1938

- Clinical Pathology Today. C. W. Maynard, Pueblo, Colo.—p. 383.  
Elliptic Erythrocytes in Human Blood. J. K. Miller and M. A. Lucas, Louisville, Ky.—p. 391.  
\*Leukocytosis Associated with Acute Inflammation. A. Nettleship, Nashville, Tenn.—p. 398.  
Focal Fatty Change of Liver and Focal Cirrhosis. H. L. Stewart, D. R. Morgan and V. L. Sprengel, Philadelphia.—p. 405.  
Cystadenoma Lymphomatousum. A. W. Freshman and S. K. Kurland, Denver.—p. 422.  
Syphilis as Factor in Bioscopic Diagnosis of Adult Cervical Lymphadenopathy. H. Fox, Philadelphia.—p. 431.  
Tularemia of the Human Breast. M. J. Kilbury and S. C. Fulmer, Little Rock, Ark.—p. 436.  
Disseminated Echinococcosis. O. O. Williams, San Francisco.—p. 442.

**Leukocytosis with Acute Inflammation.**—Nettleship studied the relation of acute inflammatory lesions to the concurrent leukocytosis by producing small lesions in the skin of the rabbit. Streptococci introduced into the skin of the normal rabbit produced acute inflammation accompanied by an early severe, prolonged leukocytosis. Cytoplasmolysis of leukocytes at the site of injection set in within two hours after injection and became more marked during the first twenty-four hours of inflammation, at which time the most rapid increase of leukocytes occurred. The cytoplasm of the leukocytes was the only tissue which necrosed early. Necrosis of the other tissues involved in the abscess did not occur to any extent until after twenty-four hours. The mechanism which may be responsible for generalized leukocytosis with acute inflammation is that some breakdown product from the action of the injuring agent on peripheral tissue diffuses into the blood stream to cause leukocytosis and hyperplasia of the bone marrow.

#### American Journal of Diseases of Children, Chicago

56: 1-234 (July) 1938

- Past Presidents of the American Pediatric Society (1888-1938): President's Address. K. D. Blackfan, Boston.—p. 1.  
Vitamin A, Carotene and Vitamin C Content of Canned Milk. O. Meulenmans and J. H. De Haas, Batavia, Java, Netherland East Indies.—p. 14.  
Hepatomegaly in Juvenile Diabetes Mellitus Treated with Pancreatic Extract. H. G. Grayzel and L. S. Radwin, Brooklyn.—p. 22.  
Size of the Heart in Healthy Children: Roentgen Measurements of Cardiac Area and Transverse Diameter for Sixty-Seven Children Between Birth and Age of Six Years. M. M. Maresh and A. H. Washburn, Denver.—p. 33.  
Basal Metabolism of Undernourished Girls. F. B. Talbot, Boston.—p. 61.  
\*Serum Cholesterol in Patients with Rheumatic Fever: Further Study. F. M. Offenkrantz, Newark, N. J.—p. 67.  
Respiratory Metabolism in Infancy and in Childhood. XXI. Daily Water Exchange of Normal Infants. S. Z. Levine, M. A. Wheatley, T. H. McEachern, H. H. Gordon and E. Marples, New York.—p. 83.  
Acute Infectious Gingivostomatitis ("Vincent's Stomatitis"). W. C. Black, San Diego, Calif.—p. 126.

**Serum Cholesterol in Rheumatic Fever.**—Offenkrantz determined the serum cholesterol of 100 patients with rheumatic fever. Forty-nine of these were used as control subjects, since they had no evidence of rheumatic activity at the time. Evidence of such activity consisted of elevation of the leukocyte count above 10,000 per cubic millimeter, an erythrocyte sedimentation rate above 12 mm. per minute and increasing cardiac damage. The mean total value of the serum cholesterol (and standard deviation) was  $181.9 \pm 23.5$  mg. per hundred cubic centimeters; the mean value of the free serum cholesterol was  $50.5 \pm 7.4$  mg.; the mean percentage of free cholesterol was  $27.3 \pm 2.23$ . Of the remaining fifty-one patients, five died. Analyses of serum

cholesterol one day before or ten minutes after death revealed severe depletion of the cholesterol ester and only slight lowering of the free cholesterol level, so that the percentage of free cholesterol rose above 30 in each instance. In eleven children who seemed to suffer activity of the rheumatic fever throughout the period (two summers) of observation the total cholesterol levels of the serum seemed to be definitely lowered and the percentage of free cholesterol elevated, so that the depletion was ascribed to the ester fraction. In twelve other patients the status of the disease fluctuated, periods of rheumatic inactivity being interrupted by flare-ups. The periods of activity again showed the lowered serum cholesterol level with the elevated percentage of free cholesterol (loss of ester). A general inverse relation was noted between the severity of the ester depletion (with a rise in the percentage of free cholesterol) and the sedimentation time. In nine cases, periods of cardiac decompensation were associated with the rheumatic infection. During such periods of failure the flare-up failed to produce the usual rise in the percentage of free cholesterol, although there was a moderate fall in the total cholesterol values. A similar situation seemed to prevail in seven cases in which a fluctuating status of the disease was complicated by a positive Mantoux reaction, though in six there was no evidence of active tuberculosis. Five instances are cited in which unusually high values for total cholesterol prevailed, despite activity of the disease. Possibly a psychiatric-functional status is associated with a particular type of cholesterol level in the blood.

#### American J. Obstetrics and Gynecology, St. Louis

36: 1-182 (July) 1938. Partial Index

- Histologic Correlationship of Endometrial and Cervical Biopsies, with Comments on Etiology of Endocervicitis. A. Wollner, New York.—p. 10.  
Causes of Vaginal Bleeding and Histology of Endometrium After the Menopause. H. C. Taylor Jr. and R. Millen, New York.—p. 22.  
\*Chemical Test for Pregnancy Applied to Determination of Estrin in Urine of Normal and Toxic Patients in the Last Trimester of Pregnancy: II. Application of Short Chemical Method and Administration of Theelin in Late Toxemias of Pregnancy. J. E. Savage, H. B. Wylie and L. H. Douglass, Baltimore.—p. 39.  
Pregnancy and Tuberculosis: Study of End Results. E. M. Jameson, Saranac Lake, N. Y.—p. 59.  
Effect of Estrogenic Hormone on Contractility of Fallopian Tubes. S. H. Geist, U. J. Salmon and M. Mintz, New York.—p. 67.  
Nonprotein, Urea and Rest Nitrogen of Blood During Labor and Puerperium. J. F. Cadden and A. M. Faris, New York.—p. 77.  
Gynecologic Features of Carcinoma of Large Bowel. J. Schwartz and H. Bergman, New York.—p. 85.  
Pitocin in Third Stage of Labor. M. R. White, Detroit.—p. 90.  
\*Bilirubin Liver Function Test in Toxemias of Pregnancy. R. A. Lyon, Washington, D. C.—p. 99.  
Potential Bisexual Character of Ovary: Preliminary Report. A. J. Ramsay and J. F. McCabe, Philadelphia.—p. 104.  
Virilism and Female Pseudohermaphroditism with Relation to Bisexual Nature of Ovary. J. F. McCabe and A. J. Ramsay, Philadelphia.—p. 108.  
Evaluation of Anterior Pituitary-like Substance Intradermal Test for Pregnancy: Study of Possible Relation of This Test to Prolan Content. J. J. Friedman and H. Fink, Brooklyn.—p. 116.  
Arsenical Encephalitis During Pregnancy. C. Kuehn, R. A. Keating and E. von Haam, Columbus, Ohio.—p. 122.  
A Five Year Study of Eclampsia in Maryland. J. M. Reese, Baltimore, and F. W. Peyton, Lafayette, Ind.—p. 130.  
Erythroblastosis. L. M. Hellman and A. T. Hertig, Boston.—p. 137.

**Chemical Test for Pregnancy.**—Savage and his associates made frequent examinations of the urine, blood pressure, cytograms, chemical determinations of the blood and renal function of fifty-eight toxemic patients admitted to the University Hospital in the last trimester of pregnancy. Twenty-four hour urine specimens were collected and estrogenic determinations were made. A few normal cases were included in order to establish normal levels of estrogenic excretion. A modification of the Schmulovitz and Wylie test for the chemical diagnosis of pregnancy by the detection of estrogen in the urine was devised. The procedure follows the principles of the original test with a few minor changes but uses only one tenth of the twenty-four hour specimen of urine. A marked reduction in the time required for the laboratory performance of this test, of from twenty-four to thirty hours to four hours, has thereby been achieved. Excretion of estrogen is expressed in terms of the "ferric chloride number," which is obtained as follows: The final colored alcoholic layer containing the estrogen extracted from the specimen of urine is filtered into a colorimeter cup and set at 10 mm. and is com-

pared with a standard 33 per cent ferric chloride solution, the reading of which is the ferric chloride number. The final reading in millimeters is multiplied by 10, and the factor 9 (the blank error is 1 mm.) is subtracted to give the final ferric chloride number. The excretion of estrogen expressed as ferric chloride numbers was 87.16 in six normal pregnant subjects, 47.05 in twenty-six patients with chronic nephritis complicating pregnancy and 40.03 in twenty-six cases of preeclampsia. Nine patients received 10,000 international units of theelin intramuscularly on each of three successive days and no improvement took place which could be ascribed directly to the hormone therapy.

**Bilirubin Test in Toxemia of Pregnancy.**—Lyon determined the function of the liver by the bilirubin elimination method in twenty cases of abnormal pregnancy (eclampsia, preeclamptic toxemia, nephritic toxemia, vomiting of pregnancy and premature separation of the placenta). The average retention was 11.8 per cent. He states that toxemias of pregnancy cannot be nosologically arranged on the basis of the bilirubin hepatic function test. However, the procedure is probably the most readily adaptable measure of the labile and manifold functioning liver. As such it may be of value together with renal function tests to aid in establishing a delimiting zone between the nephritic and preeclamptic toxemias.

### American Journal of Public Health, New York

28: 807-906 (July) 1938

- Investigation of Early Syphilis. W. T. Clark and C. A. Sargent, Buffalo.—p. 807.  
Nutrition Services in Maternal and Child Health Programs Under the Social Security Act. Marjorie M. Heseltine, Washington, D. C.—p. 813.  
Accuracy of Cancer Death Records. Eleanor J. Macdonald, Boston.—p. 818.  
Precision Methods in Determination of Heavy Metals. L. T. Fairhall, Washington, D. C.—p. 825.  
Formate Riciolente and Brilliant Green Bile Broths to Detect Coliform Organisms in Pasteurized Milk. I. C. Gunsalus and C. N. Stark, Ithaca, N. Y.—p. 832.  
Politics in Selection of Health Department Personnel: Is There a Remedy? W. P. Capes, Albany, N. Y.—p. 835.  
Sanitary Study of Commercial Laundry Practices. L. Arnold, Chicago.—p. 839.  
Supervision of Food in New York City. A. Lichterman, New York.—p. 845.  
The Nutritionist in a City Public Health Program. Sophia S. Halsted, Detroit.—p. 849.  
Schick Reactions in Students of Medicine. H. C. Pulley and M. S. Fleisher, St. Louis.—p. 854.  
Evaluation of Dental Programs for Children. J. M. Wisan, Elizabeth, N. J.—p. 859.

### American Journal of Surgery, New York

41: 1-186 (July) 1938

- Clinical Study of Pulmonary Embolism: Analysis of 146 Fatal Cases. H. Robertson, Philadelphia.—p. 3.  
Anesthesia for Thyroidectomy. G. Crile Jr. and L. E. Adams, Cleveland.—p. 22.  
Treatment of Acute Cholecystitis. H. P. Totten, Los Angeles.—p. 29.  
Observations on Clinical Employment of Pituitary and Pituitary-like Gonadotropic Principles in Certain Conditions Characterized by Failure of Ovulation. E. C. Hamblen, Durham, N. C.—p. 35.  
Endocrines and Their Relationship to the Breast. C. H. Birnberg, L. Kurzrok and S. Livingston, Brooklyn.—p. 39.  
New Surgical Procedure in Treatment of Prolapse of Uterus and Bladder. W. E. Mowery, Salina, Kan.—p. 42.  
Hemorrhoidectomy with High Frequency Electric Current. E. E. Arnheim, New York.—p. 45.  
Clinical Results Following Use of Surgical Jelly Containing Maggot Active Principle: Preliminary Report. S. K. Livingston, Hines, Ill.—p. 49.  
Relation of Trauma of the Hand to Occupation. N. E. Eckelberry, New York.—p. 51.  
Surgery of Ambulatory Patient. L. K. Ferguson, Philadelphia.—p. 57.  
Skin Graft for Ambulatory Patient. F. L. Smith, Rochester, Minn.—p. 67.

**Endocrines and the Breast.**—Birnberg and his associates treated fourteen cases of various breast dyscrasias (pain, nodules). Investigation included serial determinations of the gonadotropic substance and theelin and endometrial biopsies. There were eight cases of theelin deficiency, two of increased theelin production, two cases of deficiency of the corpus luteum hormone, one case of hypothyroidism and one of gynecomastia. The patients responded to therapy with the specific hormone shown to be lacking.

**Clinical Results with Maggot Jelly.**—During the last three years Livingston has used a surgical jelly containing the active maggot principle in the treatment of indolent ulcers of all types, carbuncles, boils, abscesses, compound fractures, burns of all types, preoperative and postoperative treatment of hemorrhoids, anal fissures and fistulas, cutaneous lesions with or without infection, infections of the cervix and genito-urinary tract and cutaneous grafts. The jelly is efficient, he believes, in chronic infections which are slow to heal and in which relief from local irritation is important and growth stimulation a necessity. The jelly, as the result of its chemical and its 5 per cent maggot content, relieves irritation and pain and is growth stimulating. In abscesses, boils and carbuncles a more rapid localization of the lesion and rapid postoperative healing occurred. Quick relief from pain, increased sloughing and earlier healing ensued in the various burns. In anal fissures and fistulas, healing was more rapid and the convalescence less painful after surgery. When the jelly is used preoperatively in hemorrhoids, bleeding is checked, irritation is relieved and spasm of the sphincter is released. When used postoperatively there are more rapid healing and less painful convalescence. More rapid granulation than with other ointments or jellies and relief from pain is obtained in indolent ulcers. Relief from irritation, softening of lesions, healing of fissures and dissolution of scaling occur in cutaneous lesions.

### Archives of Neurology and Psychiatry, Chicago

40: 1-226 (July) 1938

- Structure of Filum Terminale. I. M. Tarlov, Brooklyn.—p. 1.  
Encephalographic Findings in Cases of Athetosis and Related Disorders. T. J. Putnam and T. J. C. von Storch, Boston.—p. 18.  
Sweat Secretion in Man: II. Anatomic Distribution of Disturbances in Sweating Associated with Lesions of Sympathetic Nervous System. C. F. List and M. M. Peet, Ann Arbor, Mich.—p. 27.  
Vesical Abnormalities Associated with Parkinsonian Syndrome. O. R. Langworthy, Baltimore.—p. 44.  
Cervitamic Acid Content of Blood Plasma in Alcoholic Psychoses. L. Alexander, M. Pijou, P. G. Schube and M. Moore, Boston.—p. 58.  
Variations in Magnesium and Potassium Associated with Essential Epilepsy. A. D. Hirschfelder and V. G. Haury, Minneapolis.—p. 66.  
Method of Testing Cortical Function and Sensitivity of Skin: Aid in Differentiating Organogenic and Psychogenic Disturbances. W. H. Gantt, Baltimore.—p. 79.  
Dangerous Effects of Thorotrast Used Intracranially, with Special Reference to Experimental Production of Hydrocephalus. R. M. Suek and D. L. Reeves, Montreal.—p. 86.  
Metabolic Studies During Insulin Hypoglycemia Therapy of Psychoses. M. M. Harris, J. R. Bialock and W. A. Horwitz, New York.—p. 116.  
Effects of Hypoglycemia and Anoxia on the Central Nervous System: Basis for Rational Therapy of Schizophrenia. E. Gellhorn, Chicago.—p. 125.  
Clinical Results with Elsberg's Olfactory Test. A. Adler and K. H. Finley, Boston.—p. 147.  
Hypertrophic Interstitial Neuritis with Papilledema. A. W. Diddle and R. L. Stephens, Iowa City.—p. 151.  
New Modifications of Benzidine Stain for Study of Vascular Pattern of Central Nervous System. Margaret M. Doherty, T. H. Suh and L. Alexander, Boston.—p. 158.

**Ascorbic Acid of Blood in Alcoholic Psychoses.**—Alexander and his associates determined the ascorbic acid content of the plasma in 106 patients suffering from alcoholic psychoses and fifty-eight psychotic subjects, as controls. The essential difference between the subjects used as controls and the group of patients with alcoholic psychoses was that the latter presented a history of severe alcoholism of long standing with, presumably, a poor dietary regimen. The average ascorbic acid value for the sixty-five patients with alcoholic psychoses with polyneuritis was 0.576 mg. per hundred cubic centimeters, for the eighteen patients with alcoholic psychoses with slight or no polyneuritis the average ascorbic acid value for the plasma was 0.559 mg. per hundred cubic centimeters, and in twenty-three patients in whom the psychoses were only possibly precipitated by alcoholism the average ascorbic acid content of the plasma was 0.92 mg. per hundred cubic centimeters. The patients used as controls who were studied shortly after admission had an average for the ascorbic acid content of the plasma of 0.893 mg. per hundred cubic centimeters. Control patients who by refusing food had decreased their vitamin C intake and aged persons with psychoses had ascorbic acid values in the range of those for subclinical scurvy.



**Dangerous Effects of Colloidal Thorium Dioxide.**—Stuck and Reeves carried out experiments on cats, dogs and monkeys demonstrating hydrocephalus, precipitation and concentration of thorium dioxide (thorotrast) in the dependent parts, radioactivity and little if any elimination. In addition, the distribution of the compound was observed in the subarachnoid spaces by x-ray and histologic methods and its excretion from the subarachnoid space was studied. When the compound is injected into an animal, the material is treated as a foreign body, picked up by cells of the reticulo-endothelial system and stored. Its prolonged storage in the tissues of the body leads to mild and later to intense fibrosis. In white rats this has been followed by sarcoma. The great specific gravity of this substance is important when it is injected into the subarachnoid space, where it tends to become concentrated in the dependent portions. Of the three ionizing rays emitted by thorium, the alpha ray (or particle) is by far the most destructive. Its destructive action appears to be due to its intense ionization. Since the effect of the alpha ray is blotted out by less than 1 mm. of tissue, it is only by the injection or ingestion of radioactive substances that this ray becomes important. Hydrocephalus has been demonstrated in cats, dogs and monkeys after spinal, cisternal and ventricular injections of colloidal thorium dioxide. After ventricular injection no excretion of this material from the cranial cavity could be shown by x-ray or electroscopic examination of excreta and microscopic study of tissues. Because of the permanence of colloidal thorium dioxide in the subarachnoid space, with the continuous opportunity for its radioactive destructive effect and the development of areas of fibrosis and cicatrices, the clinical application of the material for encephalography and ventriculography is dangerous.

### Archives of Otolaryngology, Chicago

28: 1-152 (July) 1938

- Osteomyelitis of Frontal Bone: Report of Eight Cases. R. McKinney, Memphis, Tenn.—p. 1.  
\*Preoperative Management of Acute Streptococcic Mastoiditis. E. M. Atkinson, New York.—p. 10.  
Osteoma of the Mastoid Process. S. A. Friedberg, Chicago.—p. 20.  
Osteoma Growing from the Mastoid Cortex. G. M. Coates, Philadelphia.—p. 27.  
Plastic Repair After Removal of Extensive Malignant Tumors of the Antrum. F. A. Figli, Rochester, Minn.—p. 29.  
Improvement of Hearing in Cases of Otosclerosis: New One Stage Surgical Technic. J. Lempert, New York.—p. 42.  
Nasal Allergy. A. H. Rowe, San Francisco.—p. 98.  
Use of Hyoid Bone as Graft in Laryngeal Stenosis. E. A. Looper, Baltimore.—p. 106.  
New Method of Operation for Congenital Atresia of Posterior Nares. J. C. Donnelly, Philadelphia.—p. 112.

**Preoperative Management of Streptococcic Mastoiditis.**—In mastoiditis in the course of an epidemic of influenza, of infection of the upper part of the respiratory tract or of a specific fever, according to Atkinson, the organism is nearly always a streptococcus of a virulent strain, usually hemolytic. A serious complication has never been warded off in a case of streptococcic infection by premature surgical intervention. The onset of complications is only hastened by surgical intervention before the infection has been brought under control and localized. Patients with mastoiditis are suffering, at the best, from bacteremia, if not active septicemia and they need physical and mental rest. Nothing can give that to them better than morphine. The diet is fluid, and extra fluid should be forced. Local heat should be used to relieve pain and to increase the blood supply. Specific serum is used in streptococcic disease. The serum must be polyvalent and of known potency and the dose must be adequate. In an adult with a severe infection 40 cc. intravenously is not too much for an initial dose. Serum should be continued in half doses, intramuscularly, at first daily and then every second day until the infection is brought under control. Nucleic acid stimulates leukocytosis and may be given intramuscularly every second day, in alternation with serum. Strychnine and sodium cacodylate can be added for their tonic effects. In the absence of a satisfactory serum, blood transfusion should be employed and preferably an immunotransfusion. The quantity given should not be more than 250 cc. for an adult, for it is not difficult to overload an acutely intoxicated heart. Sulfanilamide and allied compounds must be used with discretion

and with due appreciation of their limitations. There is so far no convincing evidence that the drug is of value in combating any streptococcus that is not hemolytic. From seven to ten days after the onset of the infection of the mastoid a change begins to be apparent in the patient. He who previously has been apathetic and listless becomes bright and alert; the sallow skin becomes clear, the dry, furred tongue clean and moist, the temperature falls from 103 or 104 F. to normal in the morning and 100 to 101 F. in the evening, while the pulse steadies, the blood picture (which possibly showed leukopenia at first) now shows leukocytosis and the tenderness of the mastoid, which was diffuse, becomes more definitely localized. The changed clinical picture should be allowed to stabilize itself and the temperature to settle or to take on a definite swinging character for two or three days before operation is undertaken. Operation then will reveal the presence of pus, probably localized in a cavity, in any event with the limits of its extent clearly defined; the postoperative course will be smooth and free from anxiety, and healing will take place rapidly. Of nineteen patients operated on without delay from 1926 to 1931, eight had complications, three of whom died, while of fourteen patients treated expectantly between 1932 and 1935 only one had any complication and none died. The average length of stay in the hospital for the first group was thirty-three days, and that for the second only twenty-seven days.

### Archives of Physical Therapy, Chicago

19: 385-448 (July) 1938

- Treatment of Gonococcic Arthritis with Artificial Fever. W. M. Solomon and R. M. Stecher, Cleveland.—p. 389.  
Scope of X-Ray Therapy in Dermatology. E. P. Zeisler, Chicago.—p. 392.  
Electrosurgery of Cervix After Six Years. M. L. Stadium, New Orleans.—p. 398.  
Cervicitis-Vaginitis Syndrome Therapy. M. A. Roblee, St. Louis.—p. 402.  
Uterosialography and Transuterine Insufflation in Relation to Diathermy. G. Lyford, Cincinnati.—p. 408.  
Diathermy in Coronary Thrombosis. W. W. Blackman and J. L. Richardson, Atlanta, Ga.—p. 412.  
Exercise in Treatment of Chronic Cardiovascular Disease. L. F. Bishop Jr., New York.—p. 415.  
Ultraviolet in Skin Infections. J. R. Scholtz, Los Angeles.—p. 419.  
Present Status of Treatment of Arthritis. M. F. Lantman, Hot Springs National Park, Ark.—p. 426.

### Illinois Medical Journal, Chicago

74: 1-96 (July) 1938

- Individual Disease. G. Draper, New York.—p. 73.  
Treatment of Pneumonia. E. B. Freilich and G. C. Coe, Chicago.—p. 80.  
\*Effect of *l*-Cevitic Acid on Insomnia: Preliminary Report. S. Maurer, H. O. Wiles, E. W. Schoeffel, Chicago, and M. L. Fisher, Manteno.—p. 84.  
Value of Irradiated Ergosterol in Treatment of Acne Vulgaris. Josephine Hinrichsen and A. C. Ivy, Chicago.—p. 85.  
The Management of Pregnancy and Labor in Presence of Heart Disease. W. C. Danforth, Evanston.—p. 88.  
Tuberculin Tests in a College Group. A. S. Webb, Chicago.—p. 92.

**Effect of Ascorbic Acid on Insomnia.**—Maurer and his associates have given from 1 to 3 Gm. of ascorbic acid daily to more than 100 patients suffering from insomnia and other conditions without evidence of toxic effect. Overdosage produces sound sleep from which the patient may be aroused easily, followed by drowsiness during the day. This drowsiness, however, disappears within twenty-four hours after the ascorbic acid has been discontinued. Administration of ascorbic acid was discontinued immediately on reports or observation of "apparently normal" sleep and not resumed until after the subjects again reported or were observed to be having difficulty in sleep. The beneficial effects of ascorbic acid lasted from a day to more than a week and varied with different individuals.

### Iowa State Medical Society Journal, Des Moines

28: 261-372 (July) 1938

- Medical Economics. A. M. Schwitala, St. Louis.—p. 261.  
Hypertrophy of Ligamentum Flavum as Factor in Production of Low Back and Sciatic Pain. W. D. Abbott, Des Moines.—p. 266.  
Contact Dermatitis. L. J. Frank, Sioux City.—p. 271.  
Fracture Dislocations of Lower Spine: Method of Reduction. V. A. Ruth, Des Moines.—p. 275.  
Important Medicolegal Responsibility in Automobile Accidents. C. W. Ellyson, Waterloo.—p. 289.  
The Götter Heart. Irene A. Koeneke, Halsestead, Kan.—p. 282.

## Journal of Allergy, St. Louis

9: 433-534 (July) 1938

- Activation of Ultrafiltrates of Ragweed Pollen Extracts by Means of Colloidal Substances. W. L. Long and Ida Teller, Philadelphia.—p. 433.
- Specificity of Fungous Allergy. F. M. Rackemann, T. G. Randolph and E. F. Guba, Boston.—p. 447.
- Influence of Epinephrine on Antigen and Antibody Action. L. Tuft, Philadelphia.—p. 454.
- Method for Determining Pollen Concentration of the Air. E. C. Cocke, University, Va.—p. 458.
- Studies with Antigens: I. Skin Reaction Curve Obtained with Serial Dilutions of Extracts. R. I. Dorfman, New Haven, Conn., and B. G. Efron, New Orleans.—p. 464.
- \*Hypersensitiveness to Tobacco and Biopsy Studies of Skin Reactions in Vascular Disease. J. Harkavy, New York.—p. 475.
- Periarteritis Nodosa: Case Report. S. S. Berger and M. A. Weitz, Cleveland.—p. 489.
- Effectiveness of Intravenous Hypertonic Sucrose and Adrenalin in Treatment of Status Asthmaticus. E. L. Keeney, Baltimore.—p. 497.
- Insulin Hypersensitivity. A. E. Cohen and F. Simon, Louisville, Ky.—p. 503.
- \*Clinical Use of Phenylpropanolamine Hydrochloride (Propadrine) in Treatment of Allergic Conditions. W. E. Boyer, Philadelphia.—p. 509.
- Relation of Age and Sex to Incidence and Prognosis in Phenylcinchoninic Hypersensitivity. D. A. Bryce, Plainfield, N. J.—p. 514.

**Hypersensitiveness to Tobacco.**—In order to determine the nature of the tissue response in patients with vascular disease Harkavy made biopsy studies of the area of skin reacting from the intracutaneous injections of tobacco extracts and wheals produced by saline and ragweed extracts used as controls in fifteen persons. Ten suffered from thrombo-angiitis obliterans, one had migrating phlebitis, one had coronary artery disease and three were surgical patients used as normal controls. Each of these patients was tested simultaneously with six different types of tobacco as well as ragweed, timothy, horse dander extracts and Coca's diluting fluid. Positive cutaneous reactions to tobacco were obtained in the twelve patients and in one of the control subjects. The type of reaction was characterized by an immediate urticarial wheal in ten of the patients and a delayed type of reaction in two. Of the three controls, one showed an immediate reaction to tobacco and ragweed and the other two were completely negative. Of the ten who gave immediate reactions, five had reagins to tobacco on passive transfer. Eosinophils, varying in numbers, were found in the histologic sections of the immediate urticarial wheals produced by the tobacco allergen in six of eight cases of thrombo-angiitis obliterans and in one case of migrating phlebitis. The biopsies of two patients with thrombo-angiitis obliterans and one with coronary artery thrombosis, in whom delayed reactions developed, showed an acute dermatitis. The exciting role of tobacco in the twelve patients observed was corroborated clinically by arrest in the progress of symptoms when the use of tobacco was discontinued. In one patient giving a delayed eczematous type of local reaction, a generalized eczema and exacerbation of the symptoms of thrombo-angiitis obliterans were induced by repeated subcutaneous injections of tobacco extract.

**Phenylpropanolamine Hydrochloride in Allergy.**—The propadrine that Boyer used in the treatment of forty-four instances of allergic conditions (asthma, urticaria and pollen asthma) was the hydrochloride of the racemic *dl*-form, melting point from 190 to 191 C. The salt is readily soluble in water, and aqueous solutions appear to be stable over long periods. Propadrine hydrochloride was used freely. As much as 0.05 Gm. was administered every two hours for five days or more without any toxic manifestations. Previously, the patients had been taking ephedrine or other drugs for the control of their symptoms. Four patients stated that propadrine hydrochloride was inferior to other forms of medication (usually ephedrine), five believed propadrine hydrochloride to be equally efficacious to previous medication and thirty-five patients reported that their greatest symptomatic improvement occurred with propadrine hydrochloride. Clinically, bronchial spasm, rhinitis and sneezing were relieved. There were no side reactions, so commonly encountered in the administration of ephedrine. In a large number of cases the patients derived marked relief without the usual manifestations of nervousness and insomnia, a frequent complaint of patients when using ephedrine. It is not necessary to administer sedatives with propadrine hydrochloride. It appears that propadrine hydrochloride may be used safely in

cases of hypertrophy of the prostate. Tachycardia and palpitation, which have been fairly common symptoms associated with the administration of ephedrine, were not encountered in the present patients.

## Journal of Bone and Joint Surgery, Boston

20: 559-824 (July) 1938. Partial Index

- Results of Postural Reduction of Fractures of the Spine. R. Watson-Jones, Liverpool, England.—p. 567.
- \*Healing of Fractures of Atrophic Bones. J. Goisman and E. L. Comperc, Chicago.—p. 587.
- Recurrent Deformities in Stabilized Paralytic Feet: Report of 1,100 Consecutive Stabilizations in Poliomyelitis. C. H. Crego Jr. and H. R. McCarroll, St. Louis.—p. 609.
- Bone Grafts in Ununited Fractures. M. S. Henderson, Rochester, Minn.—p. 635.
- \*Diagnosis and Treatment of Sacro-Iliac Conditions, by Injection of Procaine (Novocain). K. O. Haldeman and R. Soto-Hall, San Francisco.—p. 675.
- Sciatic Nerve and Piriformis Muscle: Their Interrelation a Possible Cause of Coccygodynia. L. E. Beaton and B. J. Anson, Chicago.—p. 686.
- Cord Injury During Reduction of Thoracic and Lumbar Vertebral-Body Fracture and Dislocation. W. A. Rogers, Boston.—p. 689.
- Treatment of Injuries of Cervical Spine. W. G. Crutchfield, Richmond, Va.—p. 696.
- Ossification in Ligaments of Elbow Joint. St. J. D. Buxton, London, England.—p. 709.
- Hemangiomas of Lower Extremities, with Special Reference to Those of Knee Joint Capsule and Phenomenon of Spontaneous Obliteration. J. B. Weaver, Kansas City, Mo.—p. 731.
- Posterior Dislocation of Elbow Joint Complicated by Fracture of the Medial Epicondyle and Ulnar Nerve Injury. T. Outland and C. R. Haulon, Sayre, Pa.—p. 750.
- Curare Therapy for Release of Muscle Spasm and Rigidity in Spastic Paralysis and Dystonia Musculorum Deformans. M. S. Burman, New York.—p. 754.
- Arachnoidactylia: Report of Eight Cases. J. R. Norcross, Chicago.—p. 757.
- Changes Simulating Legg-Perthes Disease (Osteochondritis Deformans Juvenilis) Due to Juvenile Myxedema: Report of Case. F. Albright, Boston.—p. 764.
- Treatment of Birth Fractures of Femur. W. H. Robinson, Pittsburgh.—p. 778.

**Healing of Fractures of Atrophic Bones.**—Goisman and Comperc endeavored to determine whether or not the fractures of atrophic bones unite at the same rate and to the same extent as fractures of normal bones of patients of similar ages. Ten cases of fracture and seventy-seven cases of osteotomy of atrophic long bones were studied. Too many variables were present to make possible a satisfactory scientific comparison or analysis; the impression gained was that union occurred as readily in fractures of atrophic bones as in fractures of bones of normal density. The osteotomies also healed promptly. In experiments, instead of attempting to produce regional atrophy by paralysis or immobilization, the authors attempted to bring about generalized wasting of bones both in adult and in young growing rats by reducing the intake of calcium. The rate and degree of fracture healing in these animals was compared with others on a normal stock diet or on a diet with excessive amounts of cod liver oil or calcium, or both. The observation of Clarke, Bassin and Smith that it is possible to produce atrophy of the bones of young growing rats by feeding a diet which is deficient in calcium, without the development of rickets, was confirmed. The changes in the skeleton caused by diets deficient in minerals are quite similar (although generalized) to the local atrophy of bone resulting from disuse, produced experimentally by Allison and Brooks. The addition of ammonium nitrate to the low calcium diet of adult rats failed to produce demonstrable atrophy. All fractures in adult rats in all the groups appeared to heal equally well. Definite roentgenographic and microscopic evidence of bone atrophy was obtained in the growing rats fed on a low mineral diet. Fractures of nonrachitic atrophic bone in clinical and experimental cases united as rapidly as did fractures in the normal controls, from which one may conclude that mesodermal tissue cells proliferate as well in the repair of a thin bone matrix as in that of a bone matrix of normal density, and perhaps sometimes more easily in the former. Fractures of bones in either young or old rats on diets deficient in mineral did not heal more promptly or more adequately when large amounts of vitamin D or calcium, or of both substances, were added to the diets than did those in rats which had been on a normal basic diet previous to fracture; in some instances these

supplements seemed to retard the repair of bone. Atrophy of the fractured bone, both in the low calcium group and in the group of rats on the stock diet, was consistently more marked than in the unfractured extremity of the same animals. This may be explained by the fact that for a period of about two weeks after fracture the limb was not used normally. The studies would seem to indicate that there is a normal mineral and vitamin threshold below which bones become atrophic. If the deficiency of vitamin D is marked, rickets also develops and fractures of the rachitic bones heal poorly. If the deficiency is largely of the mineral element, bones may become atrophic with no rachitic changes without affecting the rate of fracture healing, and the quality of union will be comparable to the quality of the bone fractured.

**Sacro-Iliac Strains.**—Haldeman and Soto-Hall treated forty-two consecutive patients in whom the diagnosis of probable sacro-iliac strain had been made by manipulation and the injection of procaine hydrochloride into the sacro-iliac joint. In order to prevent any possible reaction from the procaine hydrochloride, the patient is placed in the prone position and 0.2 Gm. of sodium amytal is given orally. From 20 to 30 cc. of a 1 per cent solution of procaine hydrochloride is injected. In cases of bilateral sacro-iliac strain, 15 or 20 cc. of the solution may be injected into each side. The best approach to the sacro-iliac joint requires the insertion of a long (spinal puncture) needle at a point over the sacrum midway between the two posterior superior spines of the ilium. The needle is then directed toward the desired side so as to make an angle of 45 degrees with the skin. At this angle the needle will pass between the lateral portion of the sacrum and the overhanging posterior superior iliac spine, through the fibers of the interosseous sacro-iliac ligament to the posterior margin of the sacro-iliac joint. The procaine hydrochloride is injected slowly while the needle is being inserted. After bony resistance is encountered, the needle is partially withdrawn and reinserted several times, so as to obtain a fan-shaped area of infiltration along the posterior aspect of the sacro-iliac joint. The needle should not be inserted at such an angle that it will pass superior to the upper margin of the sacrum. After five or ten minutes in which time local anesthesia takes place, manipulation of the sacro-iliac joints is carried out. Such manipulations include straight-leg raising, hyperextension of the hip with the knee flexed and the patient in the prone position, sudden traction on one leg while the other is fixed, and the method whereby with the patient in the supine position one shoulder is pressed against the table and the pelvis on the same side is rotated forward as far as possible. The lower part of the back is then strapped with adhesive tape and the patient reports back in a few days. In a few cases exacerbation of sciatic pain for a day or two following the manipulation required an analgesic. In a few instances in which relief was transitory the injection of procaine was repeated after one week, usually with additional improvement. The injection caused an immediate transient disappearance of signs and symptoms in most of the cases, and in 60 per cent the relief obtained was more lasting. This procedure affords a method of determining whether a disorder of the sacro-iliac joint is responsible for the patient's symptoms.

### Michigan State Medical Society Journal, Lansing

37: 577-672 (July) 1938

- The Doctor and a School Health Program. H. Cook, Flint.—p. 593.  
The Venereal Disease Problem, Its Prevention and Control in Ingham County, Michigan. A. J. Aselmeyer and Lida J. Usilton, Washington, D. C.—p. 597.  
Application of Survey to the Private Practitioner. H. L. Keim, Detroit.—p. 607.  
Program for Control of Genito-Infectious Diseases in Ingham County, Michigan. R. S. Breaky, Lansing.—p. 611.  
Survey of Syphilis in Oakland County for 1937: The Committee on Syphilis of the Oakland County Medical Society. H. R. Roehm, Birmingham; P. V. Wagley, J. D. Monroe, Pontiac, and E. E. Hammonds, Birmingham.—p. 618.  
Six Months of Occupational Disease Reporting. J. M. Hepler, Lansing.—p. 621.  
Decompression of the Small Bowel by Intestinal Tube Drainage at Site of Obstruction. C. G. Johnston, Detroit.—p. 623.  
Review of Case of Thrombocytopenic Purpura Treated by Splenectomy. G. T. Aiken, Grand Rapids.—p. 628.

### Military Surgeon, Washington, D. C.

82: 485-574 (June) 1938

- Antiquity of Syphilitic Aneurysm. C. S. Butler.—p. 485.  
\*Hookworm Survey of CCC Enrollees. V. H. Cornell.—p. 491.  
Use of Ozone in Treatment of Parodontosis. F. E. Frates.—p. 504.  
Bullet in the Brain: Final Report. G. L. Johnson.—p. 511.  
Acute Injuries: Physiotherapy as an Aid. H. P. Makel.—p. 515.  
Anesthesia and Shock. A. Wineland.—p. 520.  
Organization and Functions of Medical Services in Combined Operations of Land and Sea Forces. W. L. Mann and E. E. Hume.—p. 529.  
Bilateral Cortical Necrosis of Kidneys: Case Report. O. O. Benson Jr.—p. 541.

**Hookworm Survey of CCC Enrollees.**—Cornell states that, of 1,079 CCC enrollees from the South, 597 (55.3 per cent) were found infested with hookworm. Following treatment, three successive specimens were found negative in 99.39 per cent of the 489 men examined. Samples of feces and soil beneath them, which had lain outdoors for several months in New York state, were found negative for hookworm ova and larvae. In the future it is believed that such a survey should be conducted by an independent laboratory group, working at successive collecting points throughout the area. This would speed up the survey so that fewer men would be discharged before treatment is given.

### Missouri State Medical Assn. Journal, St. Louis

35: 233-298 (July) 1938

- Missouri State Cancer Hospital: Its Relation to Medical Practice. P. F. Cole, Springfield.—p. 233.  
Acute Mastoiditis with Surgical Procedure. W. B. Black, Kansas City.—p. 237.  
Gonorrhea in the Male. J. R. Canlk, St. Louis.—p. 240.  
Congenital Umbilical Hernia: Report of Case. J. G. Montgomery, H. M. Gilkey, F. B. Kyger and W. L. Jennings, Kansas City.—p. 244.  
Hypoglycemic Treatment of Schizophrenia at Fulton State Hospital. F. A. Barnett, Fulton.—p. 246.  
The Neuroses. J. F. McFadden, St. Louis.—p. 249.  
Rnbella and Encephalitis. A. S. Welch, Kansas City.—p. 251.

### Nebraska State Medical Journal, Lincoln

23: 241-280 (July) 1938

- Treatment of Advanced Malignancy. A. F. Tyler, Omaha.—p. 241.  
Survey of Cancer of Breast at St. Elizabeth's Hospital 1928 to 1938. C. Johnson, Lincoln.—p. 245.  
Avitaminosis as Likely Etiologic Factor in Polynuronitis Complicating Pregnancy: Report of Case. R. Luikart, Omaha.—p. 247.  
Pharmacologic Shock Treatment of Mental Disorders with Pentamethylenetetrazol: Metrazol. J. C. Nielsen, A. H. Fechner and L. R. Nash, Ingleside.—p. 250.  
Brucella Abortus Infection Treated with Sulfanilamide: Report of Case. L. T. Hall and R. L. Dunlap, Omaha.—p. 252.  
Prostatic Obstruction in General Practice. C. A. Owens, Omaha.—p. 254.  
Bedside Recognition and Treatment of Cardiac Irregularities. J. F. Gardiner, Omaha.—p. 258.

### New England Journal of Medicine, Boston

219: 1-36 (July 7) 1938

- The State of the Society: Report of the President. C. Frothingham, Boston.—p. 1.  
Massive Hemorrhage from Peptic Ulcer. I. R. Jankelson and M. S. Segal, Boston.—p. 3.  
Granulocytopenia Associated with Sulfanilamide Therapy. J. G. Allen and C. L. Short, Boston.—p. 6.  
A Reappraisal of Vitamin D Milks. J. W. M. Bunker and R. S. Harris, Boston.—p. 9.  
219: 37-74 (July 14) 1938  
Further Experience with Regional Enteritis. C. G. Mixer and A. Starr, Boston.—p. 37.  
\*The Placental Transfer of Sulfanilamide. R. H. Barker, Boston.—p. 41.  
Progress in Gastro-Enterology in 1936 and 1937. E. S. Emery Jr., Boston.—p. 42.

**Placental Transfer of Sulfanilamide.**—In order to determine the placental transfer of sulfanilamide, Barker analyzed samples of maternal venous blood (from seventeen pregnant women suffering from infectious diseases who had received the drug shortly before delivery) and of umbilical vein blood for free sulfanilamide content, according to the method of Marshall. He found that sulfanilamide given orally to the mother in labor is found in almost equal concentrations in maternal and fetal venous bloods. Apparently the placenta is freely permeable to the drug, and fetal complications from excessive maternal dosage are theoretically possible. No complications occurred in any of the infants of this group. The doses administered, however, were small in comparison with those that would be necessary in the treatment of severe maternal infections.

## New Jersey Medical Society Journal, Trenton

35: 405-462 (July) 1938

- Comprehensive Planning of Medical Care: I. Medicine in New Jersey Looks Forward. T. K. Lewis, Camden.—p. 409.  
 Id.: II. The Hospital's Responsibility in Comprehensive Planning for Medical Care. E. Frankel, Trenton.—p. 412.  
 Id.: III. Comprehensive Planning of Medical Care: The Responsibility of the Welfare Agency. S. Ewing.—p. 416.  
 A Plan for Adequate Medical Care for All: Plan Based on Coordination of Present Resources, Present Principles of Practice and the American Concept of Government. E. W. Sprague, Newark.—p. 420.  
 Hydatidiform Mole: Report of Case. O. R. Holters, Asbury Park, and H. Kazmann, Long Branch.—p. 423.  
 Treatment of Circulatory Diseases Based on Health Examination Procedure. C. W. Crampton, New York.—p. 426.  
 Maternal Welfare Article Number Twenty-Seven: Hemorrhage in Obstetrics. G. A. Braun, Newark.—p. 430.

## Surgery, Gynecology and Obstetrics, Chicago

67: 1-152 (July) 1938

- Allen B. Kanavel; Surgeon, Preceptor, Friend. S. L. Koch, Chicago.—p. 1.  
 The Personality of Allen B. Kanavel. C. A. Elliott, Chicago.—p. 5.  
 Electrocoagulation of 400 Cervical Erosions: A Photographic Study. Otilie Zelezny-Baumrucker and G. O. Baumrucker, Chicago.—p. 17.  
 \*Renal Tuberculosis: Development of Renal Lesion. F. Lieberthal, Chicago.—p. 26.  
 Nonroutine Views in Roentgen Examination of Extremities. R. W. Lewis, New York.—p. 38.  
 Fertility and Sterility After Extra-Uterine Pregnancy. C. W. Mayo and E. O. Strassmann, Rochester, Minn.—p. 46.  
 \*Renal Tuberculosis in Patients with Active Pulmonary Tuberculosis. E. M. Jameson, Saranac Lake, N. Y.—p. 56.  
 Influence of Certain Antispasmodic Drugs on Intestine of Man. R. J. Jackman and J. A. Bergen, Rochester, Minn.—p. 63.  
 Surgical Procedure for Total Thyroidectomy. E. C. Cutler and R. Zollinger, Boston.—p. 69.  
 Surgical Repair of Long Disabled Hand. F. Young, Rochester, N. Y.—p. 73.  
 Changes in Intracholedochal Pressure Following Cholecystectomy. C. B. Puestow, Chicago.—p. 82.  
 "Subdural" Hematoma. D. H. Kaump, Des Moines, Iowa, and J. G. Love, Rochester, Minn.—p. 87.  
 Reduction of Fracture Dislocations of Cervical Vertebrae by Skeletal Traction. L. G. Barton Sr., Plattsburg, N. Y.—p. 94.  
 Radical Breast Operation. H. C. Chase, New York.—p. 97.  
 \*Hemorrhage from Carcinoma of Cervix: Control by Extraperitoneal Ligation of Hypogastric Arteries. M. L. Leventhal, A. F. Lash and A. Grossman, Chicago.—p. 102.  
 Brachioradialis Muscle Transposition for Triceps Weakness. F. R. Ober and J. S. Barr, Boston.—p. 105.  
 Retroperitoneal Pararenal Osteoma. H. L. Kretschmer, Chicago.—p. 108.  
 Amputation Stump of Arteriosclerotic Gangrene. F. W. Taylor, Indianapolis.—p. 114.

**Renal Tuberculosis.**—Lieberthal made a combined clinical and pathologic investigation of 270 cases of renal tuberculosis. In addition, postmortem studies and animal experiments were carried out to clear up certain problems which were not explained by clinical examination of the clinical cases. 1. The kidney shows a peculiar immunity to tuberculous infection by virtue of its rich blood supply and the large caliber of its capillaries. Hematogenic tuberculous infection of that organ becomes possible through the medium of embolism. 2. The initial lesions are situated mainly in the cortex and are usually bilateral. 3. In the spread of the tuberculous lesion through the kidney, three definite stages are evident: metastatic tubercles appear in the renal substance, a caseous ulcer appears on a renal papilla and a descending infection of the urinary mucous membranes follows and then an ascending reinfection of the previously uninvolved portions of the renal tissue occurs. 4. In this ascending reinfection of the renal tissue, the arterial system of the kidney plays a leading part. 5. Tuberculous strictures of the ureter and of individual calices lead to a stasis of tuberculous urine, which has a leading part in the maintenance and spread of the tuberculous process through the kidney. 6. This stasis also gives rise to hydronephrotic changes, which go hand in hand with tuberculous erosion to cause destruction of renal tissue. 7. Tuberculous lesions in the kidney have a tendency to heal, but as soon as the process breaks into and communicates with the lumen of the renal pelvis peculiar conditions are produced which counteract the tendency to heal. 8. Tuberculous lesions in the first stage are latent and cannot be diagnosed clinically. 9. Secondary nontuberculous changes which alter the final pathologic picture may occur in cases of renal tuberculosis.

**Renal Tuberculosis in Pulmonary Tuberculosis.**—Jameson declares that careful and repeated search for acid fast bacilli in smears of the sediment of a twenty-four hour specimen of urine should be made in every tuberculous patient who shows pus or albumin in the urine. Such smears, properly stained, will show acid fast organisms in a high percentage (28.4 per cent of 239 patients dying of active pulmonary tuberculosis) of positive cases. Doubtful cases and all those in which acid fast bacilli have been demonstrated should be further examined by guinea pig inoculation or culture. Renal tuberculosis was found to be three times as frequent in men as it is in women with pulmonary tuberculosis in this series, and in 76 per cent of these patients the lesions are bilateral. Patients with renal tuberculosis rarely have a "normal" urine, although the presence of tubercle bacilluria depends on the existence of a lesion in communication with the pelvis of the kidney.

**Hemorrhage from Carcinoma of Cervix.**—Leventhal and his associates performed bilateral extraperitoneal ligation of the hypogastric arteries in five cases for severe hemorrhage following maximal radiation therapy for carcinoma of the cervix. A few minor complications were experienced during the operative procedure in several instances. In one case the internal iliac vein was punctured and had to be ligated; in two cases metastatic glands were encountered along the large vessels, but these could be easily displaced to permit exposure of the hypogastric artery. No harmful changes occur in the bladder or rectum following ligation of the extraperitoneal hypogastric artery, because of the collateral circulation. This simple operation is followed by no primary mortality and is of value as a palliative measure or as the only procedure for uncontrollable hemorrhage from cervical carcinoma.

## Yale Journal of Biology and Medicine, New Haven

10: 531-594 (July) 1938

- Lyman Hall—Yale 1747: A Connecticut Doctor Who Mixed Medicine and Politics in Georgia. J. Krafka Jr., Augusta, Ga.—p. 531.  
 Bio-Electric Correlates of Methylcholanthrene-Induced Tumors in Mice. H. S. Burr, L. C. Strong and G. M. Smith, New Haven, Conn.—p. 539.  
 Relation of Toxoid Dilution to Immunizing Capacity. J. A. Bliss, New Haven, Conn.—p. 545.  
 Tetany of the Newborn: Case. Ethel Walker, New Haven, Conn.—p. 549.  
 \*Yeastlike Fungi of the Human Vagina. L. Weinstein and L. J. Wickerham, New Haven, Conn.—p. 553.  
 Blood Hydrogen Ion Concentration in Vivo: II. Effects of Acids, Salts, Dextrose and Adrenalin. C. Marshall and L. F. Nims, New Haven, Conn.—p. 561.  
 Ovarian Hormones in Relation to Female Genital Cancer. E. Allen, New Haven, Conn.—p. 565.  
 Method of Laminar Thermocoagulation of Cerebral Cortex. J. G. Dusser de Barenne, New Haven, Conn.—p. 573.  
 Review of Recent Studies on Epidemiology of Poliomyelitis in the United States. J. R. Paul, New Haven, Conn.—p. 577.

**Yeastlike Fungi of the Human Vagina.**—Weinstein and Wickerham estimated the incidence of the yeastlike fungi in the vaginal secretions of 375 women who were normal or pregnant or had some disease of the female genitalia. In addition to a study of the incidence of the yeastlike organisms, cultural determinations of the remainder of the bacterial flora of the vagina were made in each case, so that the complete bacteriologic picture was obtained. It was found that 23.3 per cent of the pregnant and 7.3 per cent of nonpregnant women harbored yeastlike organisms; that is, 64 per cent of the nonpregnant group and 56 per cent of the pregnant showed signs of infection of the vagina by these organisms. The absence of disease of the vagina when yeastlike fungi are present is not necessarily an indication of the nonpathogenicity of the organism but may indicate a resistance on the part of the host. There seems to be strong evidence for the existence of a carrier state with the yeastlike fungi. *Monilia albicans* was isolated thirty-five times, *Torula* nine, *Saccharomyces* four, *Monilia parapsilosis* twice and *Mycoderma* once. The identity of these organisms was established on the basis of cultural and fermentation reactions. Studies of the vaginal flora in cases in which yeastlike fungi were present revealed that the *Döderlein* bacillus can be recovered with great frequency, thus casting doubt on the inference that this organism is an indicator of vaginal health. *Staphylococcus aureus* (seven) and *albus* (thirty-three), hemolytic (eight) and nonhemolytic (eighteen) streptococci and *Escherichia coli* (four) were also recovered.

## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## British Medical Journal, London

2: 1-52 (July 2) 1938

- \*Treatment of Apoplexy by Infiltration of Stellate Ganglion with Novocain. W. A. Mackey and L. D. W. Scott.—p. 1.  
Common Foot Ailments. W. S. Creer.—p. 5.  
Tetanus Bacillus Recovered from the Scar Ten Years After an Attack of Postoperative Tetanus. V. Bonney, C. Box and J. MacLennan.—p. 10.  
Rising Incidence of Psychosomatic Illness. J. L. Halliday.—p. 11.  
\*Seasonal Incidence of Rheumatic Fever in This Country. A. B. Rowlands.—p. 15.

**Infiltration of Stellate Ganglion for Apoplexy.**—Mackey and Scott carried out infiltration of the region of the stellate ganglion on nineteen cases of apoplexy; a definite clinical improvement followed nine of these injections. Only in one case—the youngest patient of the series—was the improvement dramatic, and in this instance the immediate beneficial effect of the treatment cannot be doubted. In the other cases the degree of improvement was relatively slight. In one instance the injection was followed by respiratory failure, apparently produced by the solution being accidentally introduced into a vein. The results obtained do not justify the adoption of anesthesia of the stellate ganglion as a routine method of treatment in apoplexy, but further study is necessary before the method can be rejected as of negligible value. The use of the method in cases of severe cerebral hemorrhage in patients of middle age and older will serve only to bring it into disrepute. Cases of cerebral thrombosis may show some improvement of the clinical condition following anesthesia of the stellate ganglion; the degree of such improvement will be partly dependent on how much arterial sclerosis is present. The ideal case would seem to be one of cerebral embolism, especially in the young. The treatment should be given as soon after the onset of the apoplexy as possible. Only a negligible degree of improvement can be expected if the illness has lasted longer than twenty-four hours before treatment is instituted.

**Seasonal Incidence of Rheumatic Fever.**—Rowlands shows by a graph the onset of symptoms in nearly 1,500 first attacks of rheumatic fever (St. Bartholomew's Hospital, from 1882 to 1904), from the study of which there can be no doubt that in England there is a significant correlation between the seasonal variations of rheumatic fever and the rates of change of temperature and relative humidity. There are two well established associations between climate and the incidence of rheumatic fever: 1. Newsholme (1935) has clearly demonstrated that the incidence of rheumatic fever is highest in hot dry years. 2. Damp cold has been implicated by numerous workers (Poynton and Schlesinger, 1937). At first glance these associations appear to be mutually antagonistic. Fortunately this paradox is apparent rather than real. The maximal seasonal incidence of rheumatic fever does not occur in the hottest and driest months; neither does it occur in the damp cold of winter. It is to be found between the two, when the hot dry conditions of summer are changing most rapidly to the damp cold of winter. While hot dry conditions predispose to the onset of rheumatic fever, it is the rate of change to damp cold which acts as the precipitating climatic factor.

## Glasgow Medical Journal

12: 1-52 (July) 1938

- Sulfanilamide in Treatment of Gonorrhea, with Special Reference to a Review of 100 Early Acute Cases. J. G. McGregor-Robertson.—p. 1.  
\*Para-Aminobenzene Sulfonamide in Treatment of Pyelitis of Pregnancy. A. Barr.—p. 18.

**Sulfanilamide in Pyelitis of Pregnancy.**—Barr treated sixty-four cases of pyelitis of pregnancy with sulfanilamide. Simple cases can be cured in from four to five days with sulfanilamide. Renal and toxic pyelitis requires a larger dosage of the drug and a longer time (fourteen days) to sterilize the urine. The treatment is more quickly effective than any other standard line of treatment for pyelitis in pregnancy, and now it should seldom be necessary to resort to ureteral drainage or termination of pregnancy in these cases. The immediate improvement in the general appearance of the patient and her obvious feeling of well being shortly after the treatment is

begun is in marked contrast to the depression of patients taking large quantities of alkalis. Catheterization of the ureters has been unnecessary in this series even in cases of the gross toxicity. Induction of premature labor was not necessary and all patients with the exception of the two in whom miscarriages occurred went to term. In slight pyelitis from 0.5 to 0.6 Gm. of sulfanilamide three times a day rapidly produced a remission of symptoms—usually within forty-eight hours. In the severe cases a dosage of from 1.8 to 2.4 Gm. a day was required to sterilize the urine in an average of fourteen days. In the toxic cases in which nausea and vomiting were prominent features, oral administration of the drug was impossible and daily injections of prontosil (Winthrop) were given in 10 cc. doses, and in from four to five days administration of the drug by mouth was usually possible. Administration of prontosil did not seem so effective and in from five to seven days, although there was a slow improvement in the general condition of the patients, there was no material change in the bacterial content of the urine. As soon as the administration of sulfanilamide by mouth was begun there was a rapid change in the general condition, and the urine was sterile in an average of fourteen days as in the renal cases, with the same dosage.

## Journal Obst. &amp; Gynaec. of Brit. Empire, Manchester

45: 405-596 (June) 1938

- Urinary and Fecal Fistulas. N. P. Mahfouz.—p. 405.  
\*Etiology of Thrombosis and Embolism. D. Dougal.—p. 425.  
\*Postoperative Exercises as Preventive of Embolism. W. F. Shaw and C. E. B. Rickards.—p. 451.  
Postpartum Necrosis of Anterior Pituitary: Pathologic and Clinical Aspects. H. L. Sheehan and R. Murdoch.—p. 456.  
Operation for Cure of Congenital Absence of Vagina. A. H. McIndoe and J. B. Banister.—p. 490.  
\*Treatment of Puerperal Sepsis by Prontosil and Allied Compounds. Doris B. Brown.—p. 495.  
Induction of Labor by Puncture of Membranes: Review of 357 Cases. R. A. Tennent.—p. 509.

**Etiology of Thrombosis and Embolism.**—Dougal contends that tissue trauma and sepsis are the two primary causative factors of thrombosis and embolism and that as they frequently coexist in cases of thrombosis it is difficult to decide which is the more important. Slowing of the circulation is so important a predisposing cause of thrombosis that it is almost a sine qua non. There are certain contributory factors. The main problem in etiology is to find why intravascular clotting is liable to occur after labor or a surgical operation. The author is of the opinion that a subtotal hysterectomy is more liable to be followed by thrombosis than a total hysterectomy, and he believes the reason to be that in the latter operation a small opening is left for drainage at the upper end of the vagina. If there is no drainage a certain amount of blood or tissue juice may be retained and serve either as a source of thrombokinase or other coagulant or as a nidus for the growth of low grade micro-organisms. He believes the second possibility to be the more likely one. The most important secondary factor is venous stasis, and its presence is usually necessary because thrombosis rarely occurs if the blood flows freely. The blood changes are also important but only to the extent that they cause the blood to coagulate more readily or more efficiently. As these changes are fairly constant in puerperal and postoperative cases, it means that these patients are more susceptible than others to the dangers of intravascular clotting. Injury to the wall of the vessel would be a primary factor if it could be shown that postoperative thrombosis has its origin in ligated, clamped or otherwise injured vessels in the course of surgical intervention, but until this has been demonstrated it must be regarded as a secondary factor linked up with trauma to tissue and sepsis.

**Postoperative Exercises as Preventive of Embolism.**—By comparing the incidence of postoperative embolism in two institutions, in wards under the care of the same gynecologist, admitting the same type of patient, with the same preoperative and postoperative treatment—except that in only one institution systematic graduated postoperative exercises were given) Shaw and Rickards assess the value of postoperative exercises as a preventive of embolism. In the hospital in which graduated exercises were performed the incidence of fatal pulmonary embolism was 0.06 per cent in 1,635 consecutive operations. In the other hospital, without graduated



exercises, the same gynecologist in the same twelve years performed 3,618 operations with an incidence of fatal pulmonary embolism of 0.304 per cent, a percentage incidence five times as great as in the other group. The exercises carried out were as follows: The convalescent patients lift their arms high over their heads twenty times and then, lying on their backs, lift each leg the same number of times. During the first few days after an operation the patients cannot elevate their limbs so often but, even a day after an operation, the patient can lift her arms a few times while her legs can be drawn up to her body and then fully extended. This necessitates the removal of the pillow which normally supports her legs, and this is probably one of the greatest benefits, as the constant clinging pressure on the back of the thighs must retard the venous circulation.

**Treatment of Puerperal Sepsis by Prontosil.**—Brown used prontosil (Winthrop) in the treatment of thirty-nine cases of puerperal sepsis due to the hemolytic streptococcus (group A of Lancefield) and in the treatment of thirty-five cases of mastitis and eight cases of *Bacillus coli* infection of the urinary tract. Of the thirty-nine patients suffering from puerperal sepsis there were twenty-seven with local infection of the uterus, eight with septicemia (two of whom also had general peritonitis) and four cases of general peritonitis alone. Prontosil was administered intramuscularly and by mouth. Prontosil soluble was used in all the cases of puerperal sepsis, but in four mild cases the dosage was not more than 1 Gm. In the first five cases treated the first dose was given intravenously but in the remainder of the cases by intramuscular injection. It was given in the dosage of 20 cc. (0.5 Gm.) two or three times daily, the amount being decreased as the patient improved. There was marked improvement in eleven of the twenty-seven patients with local infection of the uterus after the administration of prontosil; in one patient it had no effect and in one death occurred from agranulocytosis after the sepsis had apparently been controlled. These patients were seriously ill. In the eleven successfully treated cases the average total dosage of prontosil was 42.6 Gm. The fourteen other cases were of mild or moderate severity and recovery would almost certainly have occurred without prontosil. Of the eight patients with proved septicemia six recovered—a mortality of 25 per cent. One of these patients who died was the first to be treated with prontosil and the dosage was inadequate. The second fatal case was admitted four days after a manual removal of the placenta. Of the four patients with general peritonitis not associated with a septicemia, all recovered. Relapses occurred in three of the patients but responded when the drug was readministered. The thirty-five patients with mastitis have been treated by the administration of sulfanilamide, benzyl aminobenzenesulfonamide or sulfonamide-P (sulfanilamide) in the dosage of from 2 to 3 Gm. daily. The average duration of treatment was five days. All were severe cases and a few of the patients were extremely ill. The mastitis resolved completely and patients in whom mastitis developed in the hospital have not had any abscesses of the breast, that is, since prontosil was used for acute mastitis. The author has also used sulfanilamide in the treatment of a number of patients admitted for abscesses of the breast and although most of these have required incision they have all appeared to heal more rapidly than usual.

### Lancet, London

1: 1429-1486 (June 25) 1938

- \*Natural History of Strawberry Nevus. W. A. Lister.—p. 1429.
- Intra-Ocular Pressure in Nephrotic Edema and Its Bearing on Nature of Aqueous Humor. J. D. Robertson.—p. 1435.
- Effect of Poor Social Conditions in Production of Neuroses. W. L. Neustatter.—p. 1436.
- Acute Lymphatic Leukemia in Childhood. F. D. Hart.—p. 1441.
- Production of Diabetes in Dogs by Anterior Pituitary Extracts. J. Campbell and C. H. Best.—p. 1444.
- \*Therapeutic Effect of Vitamin P in Schönlein-Henoch Purpura. T. Jersild.—p. 1445.

**Strawberry Nevus.**—From a review of the literature and study of seventy-seven cases (ninety-three nevi) of nevi it appears to Lister that strawberry nevi of infants have a natural history entirely different from that of any other type. The essential point of distinction is that they grow more or less

rapidly during the first few months after their appearance. This never continues for more than a year, and commonly it ceases between the sixth and eighth months. Thereafter retrogression sets in. Usually all trace of color has been obliterated by the fifth year, if not earlier, and only the most prominent nevi require more time for the final absorption of the redundant skin. This is the explanation of the uniformly good results recorded by surgeons, whatever the method. Those nevi which develop into large vascular tumors in adults have an entirely different early history. The treatment of strawberry nevi must be based on the knowledge of their invariable tendency to spontaneous retrogression. If the nevus cannot be quickly and safely obliterated, the mother should be reassured that however distressing the disfigurement may now appear it will inevitably fade. The object in advocating expectant treatment is to ensure that ultimately no unsightly or disabling scar will be left. There is more cause for anxiety if a nevus shows no active growth in infancy, for it is then unlikely to retrogress of its own accord.

**Vitamin P in Schönlein-Henoch Purpura.**—Jersild cites a case of Schönlein-Henoch purpura in which all the characteristic symptoms were promptly influenced by treatment with vitamin P. During the past eight years the patient presented several of the characteristic features of Schönlein-Henoch purpura (vomiting, colic, constipation, occasional blood-stained discharges, purpura, urticaria, transient edema, pain and swelling of joints, renal colic, albuminuria and hematuria). When the capillary resistance was tested by Göthlin's method the patient showed fifty petechiae, which denotes increased permeability of the capillaries. The same result was obtained by suction. There is generally held to be a direct relationship between low capillary resistance and deficiency of vitamin C. Accordingly the effect of ascorbic acid was tested before treatment with vitamin P was begun, and 300 mg. of ascorbic acid was injected intravenously every day for a week. The results were negative. The capillary resistance remained unchanged and fresh ecchymoses appeared spontaneously. Vitamin P was then given in the form of daily intravenous injections of 50 mg. of citrin. During treatment with citrin the capillary resistance rose and the ecchymoses disappeared. When the injection of citrin was stopped the capillary resistance fell and new ecchymoses appeared. When citrin was again given the capillary resistance increased again and the ecchymoses faded. During treatment with citrin the patient lost all symptoms of Schönlein-Henoch purpura. The symptoms characteristic of Schönlein-Henoch purpura may be explained as being the result of an abnormal capillary resistance, and this theory is supported by the observations of Müller (1922), who found dilated, elongated and twisted capillaries in the skin of cases of Schönlein-Henoch purpura. The effect of vitamin P is to regulate the permeability of capillaries and it was undoubtedly this effect which was responsible for the good progress in the author's patient. Thus it seems that one is justified in assuming that Schönlein-Henoch purpura is caused by deficiency of vitamin P.

### Japanese Journal of Obstetrics & Gynecology, Kyoto

21: 179-242 (May) 1938. Partial Index

- Experimental Study on Effect of Iodides on Growth and Radiosensitivity of Malignant Tumor: Parts IV, V and VI. H. Ito.—p. 180.
- Effect of Metabolism of Carbohydrate on Growth and Radiosensitivity of Malignant Tumors. M. Osima.—p. 188.
- Menstruation and Blood Groups. H. Ito.—p. 210.
- \*Our Treatment for Serious Neonatal Jaundice. H. Kawakami and E. Yogo.—p. 218.
- Efficacy of Tryptan for Anemia in Obstetrics and Gynecology. H. Kawakami, K. Yamada and S. Morimoto.—p. 227.
- Clinical Application of Vitamin B, Especially Vitamin B<sub>1</sub>, for Toxemia Gravidarum. H. Yasunami.—p. 239.

**Neonatal Jaundice.**—Kawakami and Yogo treated three cases of severe neonatal jaundice by inserting a catheter into the stomach of the newborn infant and administering through it a preparation of magnesium sulfate and hydrochloric acid: from 2 to 3 cc. of a mixture of 10 Gm. of magnesium sulfate, 1 cc. of dilute hydrochloric acid and 90 cc. of water with from 20 to 30 cc. of mother's milk. This is done three or four times a day at intervals of several hours. The treatment proved efficacious as in from one to three days the jaundice disappeared, the appetite returned to normal and the temperature fell to normal.

**Archives des Maladies de l'App. Digestif, Paris**

28: 553-672 (June) 1938

Ligation of Gastroduodenal Artery Associated with Gastric Operations in Treatment of Acute Grave Hemorrhages in Duodenal Ulcer. R. Peycelon and A. Trillat.—p. 553.

\*Hereditary Hyperbilirubinemia: Familial Cholemia and Hemolytic Icterus. R. M. Tecon.—p. 567.

Pure Fibroma of Stomach. C. Bonorino Udaondo, E. Finochietto and D. Mosto.—p. 590.

Pharmacodynamic Investigations on Morphology of Cellular Secretions. G. Wallbach.—p. 608.

**Hereditary Hyperbilirubinemia.**—Tecon believes that it is possible and necessary to differentiate between familial cholemia and hereditary hemolytic icterus. The criteria which he regards as valid are not the clinical symptoms, which may be identical, or the hematologic signs or the biochemical aspects, because the microspherocytosis is not constant and it is observed in related conditions; nor is it either the quality or the degree of bilirubinemia. The only conception which is sufficiently comprehensive to take account of all the facts is the biologic idea of the development of the disease in question in an individual, together with his ancestry and descendants. When studying the families of patients with hemolytic icterus and of those with hereditary cholemia in the light of this criterion, it is difficult for one not to conclude that the two types of disorders are closely related but different in their biologic manifestations. This differentiation seems to correspond to the observed facts. The author stresses the following points: 1. Familial cholemia is an independent disturbance, which is hereditary and congenital and which is transmitted according to the laws of heredity with dominant character; it must be clearly differentiated from hereditary hemolytic icterus; it belongs to the group of familial and hereditary hepatoses. 2. Familial chronic hemolytic icterus is a distinct disease, which is congenital and which is transmitted by both sexes according to the laws of heredity with dominant character; it is distinctly different from familial cholemia. 3. The differential diagnosis is easy in the typical cases, but it is so difficult in the atypical cases that it cannot be established with certainty before the patient has been observed for some time, has been subjected to repeated examinations and has had his family history investigated. Moreover, the diagnosis is reliable only if made by a physician who is thoroughly familiar with both disorders. The prognosis and therapy of the two disorders are so different that great efforts should be made to make a precise differential diagnosis.

**Gynécologie et Obstétrique, Paris**

37: 425-519 (June) 1938

Genital Crises of Tabes and Syphilitic Myelitis in Women. A. Binet.—p. 425.

Consideration of Twelve Fatal Cases of Pulmonary Abscess Observed After Delivery and After Abortion. P. Trillat and R. Burthault.—p. 434.

\*Cardiac Insufficiency After Delivery. P. Broustet and R. Mahon.—p. 453.

Experimental Investigations on Toxicity of Blood in Uterine Fibroma. C. Daniel and I. Florian.—p. 463.

Luteinic Cysts. B. S. ten Berge.—p. 474.

Death of One Set of Twins in Bivitteline Pregnancy. A. Costa.—p. 482.

**Cardiac Insufficiency After Delivery.**—Broustet and Mahon point out that the view that delivery marks the end of a dangerous period for cardiac patients is not true of all cases. In a certain number of patients the cardiac insufficiency, which was already manifest during gestation, continues during the puerperal period. There are even women with cardiopathy who passed through pregnancy and delivery without accident and in whom severe circulatory accidents developed during the postpartal period. The author believes that among women with cardiopathy the incidence of postpartum cardiac insufficiency is approximately 16 per cent. Of ten women with mitral cardiopathy who arrive at the end of their gestation, one or two are likely to develop manifestations of cardiac insufficiency after delivery. This cardiac insufficiency takes the form of a progressive astyole or of an acute pulmonary edema. The author thinks that these cardiac insufficiencies are essentially the result of the reentry into the general circulation of the masses of blood that accumulated after delivery in the venous depots of the abdomen. This encumbrance of the circulation in turn elicits a crisis of acute edema in the

patients with well compensated mitral cardiopathies, in whom until then the auricle was hypertrophied but not dilated. In others, in whom the auricle was already deficient and the pulmonary circulation overloaded, it produces a progressive augmentation of the pulmonary stasis, which often advances inexorably. The evolution of this form involves great danger, especially if it is accompanied by fever. The immediate and ultimate prognosis of acute edema is much more favorable. The fact that the woman is in the puerperal stage does not alter the classic treatment of these diverse manifestations of cardiac insufficiency.

**Presse Médicale, Paris**

46: 1065-1080 (July 6) 1938

\*Nonpulmonary Form of Hemoptysis: Tracheal Hemorrhages (Hemorrhagic Tracheitis). V. Cordier and P. L. Mounier-Kuhn.—p. 1065.

Posttherapeutic Radial Paralysis. C. Angelesco, A. N. Popovici and I. Baluta.—p. 1068.

**Tracheal Hemorrhages.**—Cordier and Mounier-Kuhn reserve the term tracheal hemorrhages for repeated hemoptyses, the tracheal origin of which is verified by endoscopy and in a less distinct manner by indirect tracheostomy. The authors say that the patients may request medical aid at the time of their first hemoptysis or because, although apparently in good health, they have had blood in the sputum for some time. Systematic bronchoscopy and clinical examination may suggest the possibility of a tracheal hemorrhage. The hemoptyses differ; a mouthful of blood may be expelled after a sudden effort, but in the majority of cases the expulsive cough is absent. In this respect the condition differs from tuberculous hemoptysis, in which the expulsive cough is rarely absent. The expectoration without effort (but with retrosternal tingling) impresses and reassures the patient; in drawing the physician's attention to this, he puts him on guard against an overhasty diagnosis of tuberculous hemoptysis. A definite diagnosis should never be made without a tracheoscopy, which may reveal (1) individualized lesions, such as malignant or benign tumors or, in exceptional cases, syphilitic or tuberculous lesions, (2) autochthonous tracheal lesions, which are diffuse, indicating sanguineous dyscrasias (tracheal purpura, angitis of Osler and so on) and (3) a hemorrhagic tracheitis with fixed topography, probably in relation to a tuberculous adenomediastinitis; these tuberculous lesions are old but the hemorrhagic tracheitis, although it may make careful observation necessary, does not have to be treated like a developing tuberculous process. Besides these cases there exists still another form of tracheal hemorrhage for which no explanation has been found as yet. The author says that treatment is of little avail. Local application of cocaine-epinephrine or of silver nitrate have an ephemeral effect in most cases. Inhalation of antiseptic vapors or similar measures are ineffective. The employment of coagulants is beneficial; if a spirochetosis exists, acetarsone is often efficacious. In angiomatous tumefactions, cauterization gives temporary improvement. However, the diagnosis of the disease is generally more important than is the cure, as was indicated by observations on several patients whose lives had been spoiled by worries about these repeated hemorrhages.

46: 1097-1112 (July 13) 1938

\*Action Mechanism of Male Hormones in Hypertrophy of Prostate. C. Champy, Heitz-Boyer and R. Coujard.—p. 1097.

Anginas in Carriers of Diphtheria Bacilli. J. Paraf and P. Boulenger.—p. 1101.

New Cures of Acute Spasmodic Postoperative Ileus by Simple Spinal Anesthesia. T. Asteriades.—p. 1103.

**Male Hormones in Hypertrophy of Prostate.**—Champy and his associates point out that a connection between the hypertrophy of the prostate and disturbances in the internal secretion of the testes has been suggested for a long time. They cite authors who observed regression of the prostatic hypertrophy after castration and they also direct attention to the effect of the suppression of the external secretion by means of ligation of the deferent ducts. On the other hand, it has been suggested that the internal testicular secretion be stimulated rather than the external secretion suppressed. The authors show that it is not illogical that the one as well as the other method will produce results. They cite animal experiments as well as clinical observations and explain the action of the sex hormones on the

prostate and the action of Steinach's operation. From the practical point of view they give preference to the treatment with purified testicular lipoids, because these show themselves more active on the perivascular edema of the prostate than their equivalent of testosterone. Moreover, the purified testicular lipoids are easily administered by the digestive tract. This mode of administration permits the distribution of the doses. The latter factor appears essential to the authors in that the hormones are not entirely harmless. In order to produce a reaction in the genital glands, it is not necessary to give large quantities of hormone every day. The injection produces "peaks" in the hormone content of the blood, which may be useful at the time of an attack, but the authors regard it as imprudent to prolong this condition. The treatment must be continuous, as in the case of insulin therapy, but in strictly sufficient doses. Endocrine therapy can be useful also as an adjuvant to the endoscopic resection of the hypertrophied prostate, in that it will make the effects of this surgical treatment more lasting. The authors say that one of them recommended the combination of surgical and endocrine treatment as early as 1930. As the endoscopic operation cannot entirely destroy the adenoma, they think that it is advisable to try to arrest the growth of the adenoma and to restore to the smooth muscle the extensibility it has during youth.

#### Monatsschrift f. Geburtshilfe u. Gynäkologie, Basel 108: 57-124 (June) 1938

- Difficulties in Breast Feeding and How to Overcome Them. R. T. von Jaschke.—p. 57.  
\*Clinical and Experimental Observations in Vitamin C Tolerance Tests During Menstrual Cycle. H. Winkler and W. Seebach.—p. 67.  
Sterilization by Knotting of Uterine Tubes. H. Gánszbauer.—p. 83.  
Action Mechanism of Female Sex Hormones. F. Kovács.—p. 93.

**Vitamin C Tolerance During Menstrual Cycle.**—In the first part of this paper Winkler and Seebach evaluate the different methods that have been recommended for the determination of ascorbic acid. Further, they studied the curve of elimination in case of oral and of parenteral administration. They found that in case of intravenous administration the maximum of the elimination is reached in from sixty to ninety minutes after the injection; the curve remains at this level for about one hour and after that decreases suddenly. In case of intramuscular injection, the maximum is reached less suddenly; the curve has two peaks (after one and a half and three and a half hours). This curve indicates that the depot produced by intramuscular injection is slowly evacuated. In case of oral administration, the curve rises in a straight line until the maximum is reached in about three and a half hours, but one hour later it already has declined again. In the second part of their report, the authors discuss ascorbic acid tolerance tests during the menstrual cycle. In tolerance tests on twelve women they were unable to find a relation between the menstrual cycle and the ascorbic acid elimination in the urine. In eight of the women examined, disturbances in the general condition resulted, such as headaches, lack of appetite, vertigo, fatigue, depression and reduced capacity of association. The headaches usually appeared two or three hours after oral administration. The fact that the disturbances appear on the second or fourth day of the tolerance test, that is, at a time when the organism is not yet saturated with the vitamin, indicates that hypervitaminosis cannot be the cause of the disturbances. The freedom from disorders in case of the parenteral intake of the vitamin and their severity in case of oral administration suggest that the mode of absorption is an important factor in their development. The authors suggest that the administration of sodium bicarbonate will help in preventing the disorders without interfering with the absorption of the vitamin.

#### Archivo Italiano di Chirurgia, Bologna

48: 697-792 (May) 1938

- \*Appendicular Mesenteriolitis. E. Beluffi.—p. 697.  
Vesical Bilharziasis. A. Cassuto.—p. 745.  
Chyle Angiectasia and Cystic Lympho-Angio-Endothelioma of Mesentery. E. Fiorini.—p. 758.

**Appendicular Mesenteriolitis.**—Beluffi made microscopic studies of 245 appendixes and their mesenteries which were surgically removed for various forms of chronic or acute appendicitis. He concludes that the appendicular mesentery shows

microscopic lesions which vary with the form of appendicitis and are proportional to the intensity of the disease. In acute appendicitis the mesentery shows edema, exudation, cellular infiltration, lymphangitis, rapid mobilization of reticulo-endothelial cells and perivascular infiltration. In grave cases, alterations of the local circulation take place and may be complicated by venous thrombosis and, in rare cases, by suppurative thrombophlebitis or liver abscess. After regression of acute appendicitis the appendicular mesentery shows structural changes such as retraction, formation of adhesions, thickness of the connective tissue and of the vascular walls and also the presence of lymphatic infiltration. The structural changes of the mesentery after acute appendicitis are permanent. Their presence allows a retrospective diagnosis of acute appendicitis. The structural changes of the mesentery induce mechanical and functional disorders of the appendix by which secretory stasis and the development of further attacks of acute appendicitis are stimulated. It seems possible that the infection may be transmitted through the mesentery to distant abdominal viscera even after appendectomy, which fact shows the advisability of performing an ample removal of mesentery during appendectomy followed by peritoneization of the cut surfaces of the structure.

#### Cuore e Circolazione, Rome

22: 289-340 (June) 1938

- Chronic Circulatory Insufficiency in Right Pleuritis with External Mediastinopericarditis. G. Pelá.—p. 289.  
\*Ketone Bodies in Blood and in Urine in Decompensated Heart Diseases. L. Capani.—p. 304.  
Malformation of Heart and Congenital Complete Atrioventricular Dissociation: Case. A. Calò.—p. 323.

**Ketone Bodies in Heart Diseases.**—Capani studied the behavior of the ketone bodies in the blood and urine of fourteen patients suffering from heart diseases in different phases of decompensation. He found that ketonemia is almost normal in decompensated heart diseases without edema and increased in the presence of edema. Ketonemia parallels the intensity of edema and diminishes with improvement of the circulatory conditions. The highest levels of ketonemia are observed in the blood of patients who are in the preterminal phase of decompensated heart disease with anasarca. There is no relation between ketosuria and ketonemia. Ketosis in decompensated heart diseases with edema depends on the diminished velocity of the circulation, which results in a diminished ketolysis at the tissues and disorders in the interchange between the blood and the interstitial fluids with consequent accumulation of ketone in both fluids.

22: 341-396 (July) 1938

- Electrocardiography in Acute Attack of Angina Pectoris. E. Secondari.—p. 341.  
\*Cardarelli-Katzenstein Test for Function of Heart: Behavior of Peripheral Venous Pressure. G. Chiorazzo and D. Perini.—p. 354.  
Variations of Reactive Hyperemia and Behavior of Temperature After Occlusion of Circulation in Some Vascular Diseases. G. Personeni.—p. 368.

**Venous Pressure During Occlusion of Femoral Artery.**—Chiorazzo and Perini induced occlusion of the femoral artery in thirty cases by means of the application of an elastic bandage at the thigh (Cardarelli-Katzenstein test). They found that the test in normal persons induces transient tachycardia, which is followed by bradycardia, increased systolic pressure in the arteries and diminution of the venous pressure. This circulatory phenomenon disappears immediately after removal of the elastic occluding bandage. The greatest arterial pressure may or may not be increased in the course of the test in persons who do not have heart disease but a hypotonic heart. In all cases, however, the venous pressure diminishes during the test. In heart diseases with actual or latent decompensation the test induces tachycardia, lowering of the greatest arterial pressure and increase of the venous pressure. In actual or latent insufficiency of the left side of the heart the arterial and venous pressure diminishes during the test. Patients who are suffering from heart disease and react as do normal persons during the test are considered as having lasting compensation. According to the authors the test shows myocardial insufficiency early in the evolution of the disease, at a time at which the clinical symptoms of decompensation have not yet appeared. Several types of heart insufficiency can be differentiated by the behavior of the venous pressure in the course of the test.

**Policlinico, Rome**

45: 297-344 (July 15) 1938. Surgical Section

Process of Reparation of Fractures Following Functional Exclusion of Kidney: Behavior of Calcemia in These Pathologic Conditions. F. De Victorii-Medori.—p. 297.

Torsion of Spermatid Cord in Inguinal Retention of Testicle: Clinical and Anatomic Study. L. Giornelli.—p. 320.

\*Elimination of Urea, Phenolsulfonphthalein and Indigo Carmine in Separated Urine in Eleven Cases of Renal Blastomatosi. D. Torre.—p. 332.

**Renal Cancer.**—Torre observed the elimination of urea, indigo carmine and phenolsulfonphthalein in the separated urine of both kidneys of eleven patients suffering from unilateral renal cancer. He found that the urea was eliminated at the same speed and concentration by the normal as by the cancerous kidney in nine cases, whereas it was delayed and insufficient in two. The elimination of indigo carmine was also the same for the two kidneys in nine cases whereas it was diminished in two. The phenolsulfonphthalein test gave the same results for the two kidneys in seven cases. In four the elimination of phenolsulfonphthalein by the cancerous kidney was insufficient and the normal kidney was in vicarious hyperfunction. The microscopic study of the renal parenchyma showed that the portion which was not infiltrated by cancer was normal in nine cases. It was the seat of sclerosis in one case and of suppurative in another case. In both cases the tests of elimination of urea and color substances gave results showing deficiency. The author concludes that the results of chromoscopy and of the tests of elimination of urea and phenolsulfonphthalein may be erroneous, showing normal function of the cancerous kidney even in advanced phases of the condition if a certain part of the renal parenchyma is not involved by the tumor. The results of the tests show insufficiency of the structure if the renal parenchyma is the seat of lesions other than involvement by the tumor. The false results of the tests in the presence of unilateral renal cancer depend on the preservation of the renal parenchyma and on a dysfunction of the metabolism of urea which takes place in the course of unilateral renal cancer, owing to a reflex hypofunctioning action of the cancerous kidney on the normal kidney.

**Beiträge zur klinischen Chirurgie, Berlin**

167: 513-674 (June 1) 1938. Partial Index

Growth Disturbance of Ollier's Type (Dyschondroplasia). W. Stark.—p. 513.

\*Lipoidosis of Gallbladder. T. Ahlin.—p. 555.

Treatment of Central Dislocation of the Hip. B. Karitzky.—p. 577.

Acute Osteomyelitis. W. Inthorn.—p. 595.

Present Status of Cholecystostomy and Its Results in Frankfurt Clinic. H. Geissendörfer.—p. 609.

\*Studies on Origin and Significance of Strawberry Gallbladder. E. Fenster.—p. 641.

**Lipoidosis of Gallbladder.**—Ahlin states that lipoidosis of the gallbladder is a fairly frequent observation in the pathologic section of St. Erik's hospital, Stockholm, and that it is found in various diseases. The sex distribution is about equal. There is an increase in the frequency between the ages of 40 and 50 years for women, whereas in man the incidence is about equal for the various ages. The gallbladder lipoidosis is in no way related to inflammatory alterations in the gallbladder wall and does not lead per se to serious disturbances. General disturbances of lipid metabolism play a part in the production of gallbladder lipoidosis. The frequent occurrence of this condition in obese persons speaks for this. Local conditions which, however, are as yet not understood may furnish the explanation for the occurrence of the condition by retention of lipoids in the mucosa. With the exception of pure cholesterol stones, the concurrence of stones and lipoidosis of the gallbladder is rare. For this reason the author considers it improbable that lipoidosis must precede stone formation and that there is a direct relationship between the two. However, it would be impossible to deny the existence of common etiologic factors for the two processes. Lipoidosis of the gallbladder is apparently a reversible process capable of complete restitution to the normal. The author's studies do not support Bernhard's conclusion that patients with gallbladder lipoidosis are more predisposed to cancer than other patients.

**Strawberry Gallbladder.**—The concept "strawberry gallbladder" as an independent disease entity, according to Fenster, and the contradictory interpretation of it as an accompanying lesion in the presence of other gallbladder and liver diseases

is due to the fact that the pathologists recognize two varieties of strawberry gallbladder; namely, the one characterized by an ordinary network and the other characterized by the formation of polyps. There is considerable unanimity as to the clinical picture. The author stresses the frequency of pericholecystic adhesions and enlargement of the lymph nodes of the cystic duct as one of the causes of the slowing of the lymph current in the gallbladder area and its role in the so-called serous inflammation. On the basis of his own experiments, the author favors the idea of absorption of cholesterol rather than of secretion, while at the same time rejecting inflammation as the only cause of development of the strawberry gallbladder. The role of certain mechanical conditions such as gallbladder stasis and dyskinesia are admitted. Fenster considers the cholesterol esters found in the bile of such gallbladders as a product of secretion of the bile and feels that its occurrence, as well as that of the quinine-resisting liver lipase in the blood, is a proof of the existence of damage to the liver parenchyma. The presence of larger deposits up to the formation of small polyps and the frequent occurrence of mulberry stones point to the relationship between strawberry gallbladder and gallstone formation. The frequent involvement of the pancreas is regarded in the same light as the parenchymatous lesions of the liver as a proof that strawberry gallbladder is not a harmless condition of local significance but an independent disease entity. The author stresses diagnostic difficulties, particularly in differentiating the strawberry gallbladder from dyskinesia. He advocates operative removal of the strawberry gallbladder combined in certain cases with dilation of the sphincter of Oddi. He regards the operative intervention as causative therapy in that it frees the patient from pain, removes the dyskinesia as well as a disease link in the gallbladder-pancreas-spleen system, as well as prophylaxis against gallstone formation.

168: 1-176 (July 13) 1938. Partial Index

\*Experimental and Clinical Studies on Gastric Secretion After Operative Removal or Functional Loss of Gallbladder. F. Bernhard and T. Eck.—p. 1.

Blood Transfusions and Care of Donors in Surgical Clinic of the University of Göttingen. H. Wille-Baumkauff.—p. 23.

Treatment of Damage to the Ureter Occurring in Course of Pelvic Operations. A. Kalo.—p. 33.

Value of Roentgenologic Studies of Layers of the Body (Tomography) in Surgery. G. Arndt.—p. 39.

Role of Thyroid in Clinical Course of Rickets. W. Haase.—p. 64.

**Gastric Secretion After Cholecystectomy.**—Bernhard and Eck state that, in 160 patients who had had a previous cholecystectomy, the gastric symptoms most frequently associated with gallbladder disease were in some cases relieved, while in some the operation had initiated these gastric disturbances and in others had no influence on them of any kind. The authors prepared a Pavlov pouch on five dogs, determined its secretory status and in a subsequent operation removed the gallbladder and then made further determinations of the gastric secretion. They noted a diminution in acid secretion in three of the dogs, while in two there was no alteration. They did note, however, an alteration in the manner of the secretion of the gastric juice. The pepsin content of the juice was regularly lowered, and the peak of the pepsin and the acidity was arrived at after a considerably delayed period. They concluded from their animal experiments that the removal of the gallbladder alone did not account for the high degree of subacidity and anacidity in patients suffering from gallstone disease. They have further shown that the pancreas and the liver as well as the gastritis and injuries to the vagus have a part in these alterations. It appeared that the beneficial influence on gastric secretion, as the result of the removal of the gallbladder, was limited to a few clinical forms of gallbladder disease. The authors studied the effect of cholecystectomy, which had been performed not less than fifteen years previously, on the gastric complaints and tolerance to fat of 175 patients. They noted that cholecystectomy performed for catarrhal cholecystitis without stones or for chronic cholecystitis with stones did not influence gastric complaints particularly favorably. The results, on the other hand, in acute and subacute cholecystitis were strikingly good. The fat tolerance was frequently aggravated through a cholecystectomy in catarrhal cholecystitis but markedly improved in the other two forms. The statements of the earlier authors as to

the frequency of subacidity and anacidity after cholecystectomy are not accurate for the reason that the height of acid secretion in the stomach of men after the removal of the gallbladder is not infrequently delayed so that the ordinary evacuation of the stomach contents gives erroneously low values. The authors stress the advisability of administering hydrochloric acid and pepsin before meals to patients with subacidity or anacidity.

### Deutsche Ztschr. f. d. ges. gerichtl. Medizin, Berlin 30: 1-58 (July 6) 1938. Partial Index

- Histologic Examination of Mark Made by Hanging. H. Rocr and H. Koopmann.—p. 1.  
Question of Combined Air Embolism of Small and Systemic Circulation After Attempted Abortion. F. Hausbrandt.—p. 19.  
Postmortem Preservation of Immunity Changes in Blood and Tissues: Limits of Diagnostic Utilization. C. M. Cattabeni.—p. 33.  
Automatic Pipet for Determination of Alcohol Content of Blood According to Widmark. G. Weyrich.—p. 43.  
\*Neuritis Caused by Prophylactic Vaccination Against Tetanus. K. Mészáros.—p. 45.  
Determination of Paternity by Means of Blood Group and Civil Law. H. Schneickert.—p. 50.

**Neuritis Caused by Prophylactic Tetanus Serum.**—Mészáros says that the neuritis caused by vaccination against tetanus is comparatively rare. However, a knowledge that it may occur is important in decisions on accident compensation, since the neuritis caused by the tetanus serum may persist after the cure of the accidental injury. The author reviews the literature on this problem and then describes a case of his own observation. The patient developed an urticaria-like exanthem eleven days after the prophylactic tetanus vaccination and then neuralgic pains in the right arm and weakness in the right deltoid muscle, in the anterior serratus, in the latissimus dorsi and in the infraspinatus. On the basis of the connection in time and of the typical localization in the region of the fifth and sixth cervical roots, the neuritic symptoms must be regarded as sequels of the protective vaccination against tetanus, the more so since no other cause of the paralysis was demonstrable. The course may be designated as favorable, since the condition of the patient improved in nine months to such an extent that the patient could take up his work again; but even after two years there still remained a slight impairment. The assertion of some physicians that the damage to the nerves could not have been caused by the tetanus injection, since it had been made under the skin of the chest, that is, at a site distant from the impaired nerve, is refuted by the fact that the tetanus serum with its antitoxin content does not exert its action at the site of injection but after resorption attacks distant nerves. This is proved also by three other cases cited by the author. He concludes that these rare complications offer no argument against the prophylactic use of tetanus serum. Complete cure is usually obtained in about two years.

### Zeitschrift für Kinderheilkunde, Berlin

60: 1-76 (June 20) 1938

- Casuistic Contribution to Schaumann's "Benign Granulomatosis." O. Naumann.—p. 1.  
Outcome of Convulsions During Early Childhood and Their Modification by Roentgen Rays. E. Wittermann.—p. 9.  
Development of Wrist Joint During First Year of Life and Rickets. E. Graser.—p. 30.  
\*Vitamin E: Its Action on Lactation of Mothers and Growth of Their Nurslings. G. Gaedke and C. Bennholdt-Thomsen.—p. 52.  
Investigations on Phosphorus Ester in Human, Cow's and Goat's Milk. G. De Toni and G. Graf.—p. 74.

**Vitamin E and Lactation.**—Gaedke and Bennholdt-Thomsen say that it is generally assumed that vitamin E, the anti-sterility factor, has a favorable effect on lactation. However, no objective scientific proofs have been furnished as yet that vitamin E does stimulate lactation. For this reason the authors decided to study the action of additions of vitamin E to the normal diet, of the lactating action of wetnurses and on the growth of their nurslings. Of six wetnurses, two served as controls and were given only inactive substances. It was found that the quantity as well as the fat content of the milk remained uninfluenced by the addition of vitamin E to the normal diet. The infants being nursed by the wetnurses receiving the addition of vitamin E showed no essential difference in their increase in weight from the other two nurslings. The rates of growth in length likewise showed no deviations. All fluctuations were within the limits of the physiologic norm. Neither the wet-

nurses nor their children showed differences in their subjective conditions which could be ascribed to vitamin E. Moreover, the hemoglobin content of the blood of mothers and children remained uninfluenced by the fertility vitamin. The authors further describe animal experiments on vitamin E. They found that four of a litter of eight young rabbits which were given vitamin E in oil once a week showed retardation in their growth in comparison to the four other animals, which were given the same quantity of inactive olive oil. Three of the four animals which had undergone treatment with vitamin E died later as the result of the administration of massive doses of vitamin E, whereas only one of the four controls died. Studies on animals of another litter indicated that these unfavorable effects of vitamin E on rabbits were not the result of a hypervitaminosis but rather of some substance in the wheat germ oil.

### Finska Läkaresällskapets Handlingar, Helsingfors

80: 919-984 (Dec.) 1937

- \*Subconjunctival Epithelial Cyst and Trachoma: Case. S. Werner.—p. 919.  
Lactoflavin (Vitamin B<sub>2</sub>) in Retina in Different Conditions of Adaptation. M. Zewi.—p. 923.  
\*Foramen Ovale Cordis Apertum and Its Role in So-Called Paradoxical Embolism. L. Löfgren.—p. 937.

**Subconjunctival Epithelial Cyst and Trachoma.**—Werner describes an epithelial cyst in the conjunctiva which was about 1.5 cm. long and 0.3 cm. thick. Nine years earlier trachomatous granulations in the same eye had been treated by expression. In the connective tissue of the lids, numerous trachoma granulations were still seen. He ascribes the tumor to epithelial proliferation or to fold formation in the connective tissue, probably due to the inflammatory trachomatous process.

**Role of Foramen Ovale in Paradoxical Embolism.**—Löfgren says that in 785 necropsies (in 615 males and 170 females, including no children under the age of 10) foramen ovale cordis apertum was found in 120 cases, or 15.3 per cent. It varies considerably in size and form, the usual diameter being from 2 to 5 mm., while the largest opening is passable to a finger. Unlike a number of other anomalies in the heart, it does not affect physical development or length of life. According to Frey, thrombi in cases in which there is open foramen ovale most often pass from the right auricle to the right ventricle. However, when there is a pulmonary embolus simultaneously with open foramen ovale, possible thrombi in the right auricle which are of the size to pass the foramen ovale are, because of the changed conditions of pressure, passed by way of the left auricle and ventricle into the arterial circulation, where small, otherwise harmless, thrombi may cause death. In cases with the open foramen ovale and simultaneous pulmonary embolus, thrombi as a rule pass through the foramen. Thrombi may often remain in the open foramen, and crossed air and fat emboli may occur in cases with open foramen ovale.

### Ugeskrift for Læger, Copenhagen

100: 719-748 (June 30) 1938

- Elimination of Androgen in Urine During Treatment of Adiposogenital Dystrophy with Gonadotropic Hormone. K. Sand and P. Plum.—p. 719.  
Application of Chemotherapeutics of Sulfanilamide Group in Treatment of Gonorrhea: Preliminary Report. A. Kissmeyer.—p. 724.  
\*Treatment of Gonorrhea with Sulfanilamide (Streptamide Leo). A. Kristjansen and O. Kaalund-Jørgensen.—p. 730.  
Tuberculous Meningitis During Pregnancy: Case. H. Harpøth.—p. 739.  
After-Examination of Lupus Patients in Jylland. S. Lomholt.—p. 740.

**Treatment of Gonorrhea with Sulfanilamide.**—Kristjansen and Kaalund-Jørgensen treated 118 patients with sulfanilamide from December 1937 to May 1938. The by-effects were grave in only one case (hepatitis). The treatment was effective in forty-one (82 per cent) of the fifty women, none of whom were observed for less than six weeks. Three cases are listed as possible "late recurrences." The results were good in twenty-nine (85 per cent) of the thirty-four men with complications. Good results also followed in one of the nine men with infections of less than three weeks' duration, and in thirteen of the nineteen with infections of more than three weeks' duration. The author found that patients resistant to sulfanilamide were later easily affected by other treatment. Recurrence in men after treatment with sulfanilamide was within fourteen days after ending treatment; late recurrences in men were not seen.



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## SOME FEATURES OF PRESENT DAY DIAGNOSIS

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CHICAGO

To have been elected president of the Congress of American Physicians and Surgeons is an honor that is highly appreciated and for which sincere thanks are here tendered. The distinguished men who in the fifty years of its existence have held this position almost without exception in their presidential addresses discussed topics concerning which they had first hand knowledge derived from personal experience. In conformity with this wise precedent, I shall speak from the point of view of a clinician whose fifty years as medical practitioner and teacher have been intimately and chiefly concerned with the patient. I shall confine my remarks to one phase only of clinical medicine; viz., diagnosis and some of its present day problems.

### THE PROCESS OF DIAGNOSIS

Can anything new be said concerning diagnosis? Have not its principles and its methods been firmly established for centuries? Cannot one predict that for generations to come physicians will still be trying to answer the question "What is the matter with the patient?" by following the time honored procedure of considering the hereditary, environmental and personal history; the story of the present complaint; the physical examination; the reports of laboratory; instrumental and therapeutic tests; the advice of specialists; finally, the assembling of all these facts, their careful analytic and synthetic study, and their summation in a logical conclusion?

Why, then, bring up a subject so trite?

I might plead the necessity of repeating the well known from time to time lest it be forgotten; also the importance of the topic, for the desire to make a correct diagnosis by which the way is prepared for rational treatment is the most compelling motive in the practice of medicine. A more potent reason, however, is that diagnosis today presents problems that are quite different from those of even a decade ago, for diagnosis is not as stable as it is often thought to be. The order of procedure may remain the same but technic changes. Every addition to medical knowledge carries with it the necessity of a revision of the methods of diagnosis. The microscope, bacteriology, x-rays, applied chemistry, endocrinology, these and many other factors have combined to make diagnosis far different from what it was when it was chiefly a matter of scholastic musing,

adherence to tradition, and idolatrous veneration of the fathers of medicine. These newer facts in medicine and cognate sciences, facts that aggregate a huge mass, have in some respects rendered diagnosis simpler and more accurate; in other respects, more difficult and more complicated.

At present diagnosis as well as medicine in general is in a good deal of turmoil, with many problems pressing for solution. These will not be solved, though the solution may be helped, by resolutions or pronouncements of medical organizations, reports of special committees or recommendations of foundations of various kinds, no matter how sincere and searching the efforts of any or all of these bodies may be. They will not be solved by the utterance of epigrams like "train for power," "back to Hippocrates," "back to Galen," for, like most wise sayings, these are but partial truths. The answers will not be found by cloistered meditation in the library or by mere sitting in at a pedagogic conference, or by indulging in day dreams in which the ideal and even the idyllic are permitted to becloud reality. Diagnosis is an eminently practical process, concerned with human beings, with pain and bleeding, with germs and fever, with failing function of organs, with threatening death. Theory and science are involved, of course. But diagnosis implies the application of theory and science. As electrical engineering needed an Edison as well as a Faraday, so modern medicine is a debtor to Lister as well as to Pasteur.

The solution will come mainly through evolution, by the process of trial and error based on the experience of general and special practitioners, research workers in ward and laboratory and on the reaction of the public, i. e. the patients themselves—and the patient, let it be noted, is the party whose interests are paramount. All these other agencies that I have mentioned may be helpful though not decisively final. A frank statement of difficulties, with tentative suggestions for remedies, may also be helpful though also indecisive. It is in such a hope that, repeating much that has been said by others as well as by myself, I venture to discuss here some—by no means all—features of modern diagnosis. By speaking often in the first person singular it will be evident, I trust, that I am not presuming to express in this address any but my own opinions.

### DANGERS FROM IGNORANCE

A prolific cause of errors in diagnosis is ignorance, varying in degree, of course, on the part of the practitioner. He may be lacking in information because he has no urge to study; has never been taught to study or perhaps lacks the ability to study. He made a mistake in his choice of a profession; the medical school erred in encouraging him or even permitting him to be a physician. He fails to keep abreast of the times by

reading and by conferences with his colleagues. He loses touch with the laboratory and the morgue. He is either a forceless, inefficient man who, feeling his inferiority, attempts but little and does that poorly or he may be one who, possessing only the little knowledge that is a dangerous thing, becomes a menace because he is blissfully unaware of the meagerness of his knowledge. Where better informed and wiser men would fear to tread, he rushes in with scalpel or harmful drug or half-baked theory, before he knows the real nature of the ailment he has been called to treat.

The threat from this type of doctor who is unaware of his limitations is one of the strongest arguments for intensive work in undergraduate and intern days, e. g. the exhaustive study of a case or a group of cases through ward, laboratory, operating room, perhaps the deadhouse. Or it may be a problem studied in some department, such as pathology or physiology. Such work will inculcate the principle of thoroughness, the importance of reading original articles and monographs and not merely textbooks. By such intensive work the student learns how medical knowledge is acquired and what are its present day deficiencies. He is better able to distinguish between theory and fact; he gets rid of the incubus of unthinking veneration for the printed word. He learns to reason and judge for himself, though the responsibility for training in independent thinking should not fall primarily on the faculty of the medical school but rather on the school of arts and sciences, a point dwelt on in 1900 by H. P. Bowditch in his presidential address before the fifth session of this congress.

This "majoring" in the medical school has been opposed by some who, in their fetish-like worship of the old type of general practitioner, not realizing or ignoring the tremendous changes that have taken place, argue that the student should not be permitted to do any intensive work because it smacks of specialism. To these objectors specialism is anathema. Is it not time that this out-moded attitude be given up?

The principle of majoring should be carried over into the life of practice. Unless this is done, the practitioner goes stale. Concentration on some subject with the accompanying sense of mastery and the resultant zeal for the new is what will save doctors from remaining mere drudges, with no pleasure in their daily grind, with no sense of progress. This is not specialism in the strict sense. It is expertness, superior knowledge and skill. The process is not a narrowing one; on the contrary, it is broadening.

There is another advantage that will come from this intensive study. It will make clear to the doctor that he has not performed his whole duty when he puts the proper caption on a disease. He should know the cause of such disease and the manner in which such cause has operated in the particular case in hand. He should be familiar with the alterations in anatomy and physiology that are involved, should have knowledge of the natural course of the disease, the best way of handling it, the dangers to the patient and to others, the social and economic import of the illness. This implies well directed instruction on the part of the teacher, much observation and wisely utilized clinical experience on the part of the practitioner.

But it is impossible for even the diligent and bright doctor to know all. There is too much of it. He must select certain topics toward the mastery of which his major efforts are directed. The medical school may,

perhaps should, offer him the opportunity of choosing from a wealth of courses. It should guide him in selecting what seems most suitable to him as an individual. It should compel him to select what is essential to physicians as a class, that which teaches the broader, fundamental principles and the facts that are necessary for his everyday work as a practitioner and for his future development. All this is no easy task. The problem of what constitutes wise guidance for the undergraduate, postgraduate and graduate student is being given careful, expert consideration by practitioners themselves, by medical schools, by able committees of investigation and by such bodies as the Council on Medical Education and Hospitals of the American Medical Association, which has functioned so long and so well. Much progress has already been made.

It may be added here that many of us who are older magnify the difficulty that the undergraduate or young practitioner has in grasping even a respectable fraction of the huge mass of knowledge that has accumulated in the last fifty years. We recall the struggle we had when, bewildered, we tried to understand the new that was then in the chaos of formation. We forget that many questions which were at that time subjects for argument and investigation are now settled. The tenets of bacteriology are approved, aseptic surgery and midwifery are established practices, the morphologic and chemical examination of the blood, the x-rays are accepted as helpful aids. Students of today have similar though different problems to face, but the difficulty of learning much that we struggled with is not as forbidding as we often think.

#### NEED FOR HELP

Ideally the doctor should be able by himself to interview and examine his patient, make the instrumental and laboratory tests and reach a decision as to diagnosis. This ideal is rarely realizable, for our doctor, even though a paragon, cannot do these things unaided. How can he best get help? Physicians are already answering this question by methods determined by individual needs, opportunities and experience. One takes an assistant or associate. Another joins colleagues in hiring and supervising a competent technician or he becomes a member of a group or clinic that may include specialists of several types or he avails himself of the services of his hospital, the municipal laboratory or a properly conducted private laboratory.

Yet these plans have certain weak features. The further away the doctor is from the laboratory, the instrument, the consultant and, most important of all, from the patient, the greater is the likelihood of error. The doctor by eliciting the history himself may learn as much from the way a patient answers questions as from the answers themselves. If the doctor sees for himself the x-ray film, the stained blood under the microscope, he has a more nearly correct impression than that conveyed by merely reading the report of the consultant or assistant. Also many instruments and special tests are not as precise as they are sometimes thought to be; the technician is prone to err in interpreting what he sees in the laboratory just as is the doctor when he tries to translate into pathology what he observes at the bedside. And there is a real danger from overspecialization. These topics have, however, been so frequently and so well discussed that to take them up further in this paper would be needless repetition. From the standpoint of diagnosis, may from that of medical practice in a broader sense, may we not

accept the specialist, the laboratory and some form of group practice as *faits accomplis*? But first the specialist, the laboratory, the group must show by certification or some other test that they are worthy to offer reliable aid to the practitioner.

#### EXTENT OF THE EXAMINATION

There is another feature of modern diagnosis of minor value, perhaps, that is worth consideration. Not all patients need the thorough going over that they are often given. The family doctor is familiar with the past health history of his patient. His problem is that of the present illness. With a few questions, a snappy physical examination, he recognizes an attack of erysipelas or measles or acute cardiac failure. He may use the thermometer, the blood counter or the rubber glove but he sees no call for the Wassermann test, the x-ray film or the electrocardiogram. He is well aware that everyday symptoms that seem simple may be due to disease that is serious. Headache may mean tumor, rapid pulse may be due to perverted thyroid action, dizziness may come from pernicious anemia, the acute indigestion may mean appendicitis, carcinoma of the bowel or coronary thrombosis. But he feels that many patients with stomach and bowel upsets, for example, and other everyday ailments with no urgency about them are quite properly examined and treated for a time on the basis of a provisional diagnosis. They need not be rushed to the hospital for study of stools, tonsils, teeth, sinuses, blood chemistry and the like. He agrees with the Mackenzie that, when one wishes a flat tire fixed, one resents the advice of the garage man that a thorough overhauling of the car is necessary. It is here that there comes into play not alone the knowledge possessed by the physician but also his discriminating good sense and his mental acumen kept sharp by experience. He will realize that, when life may be urgently threatened by waiting, the safety of the patient must incline the decision to immediate action. To be informed is to avoid dangerous errors in practice, said Billroth. Knowledge and above all else wisdom are here at a premium.<sup>1</sup>

I wish to utter a word of caution as to the way in which diagnoses are sometimes made in connection with the periodic examinations or health check-ups that are so popular today. In cases with obscure symptoms that possibly portend evil, each and every form of examination may be indicated. So too there can be no quarrel with the doctor who feels that he can earn an honest dollar if he yields to the demand of his intelligent patient that, regardless of time or expense, a complete examination be made and a detailed opinion be rendered as to the state of health. Yet even here caution is necessary. Some investigations, e. g. bronchoscopies, ureteral catheterizations, exploratory punctures, allergic tests, are not entirely devoid of risk. Nor is it always wise to discuss with an already apprehensive patient symptoms that are trivial and negligible. Anxiety neuroses and phobias are easily aroused. Such mental upsets can be avoided if the doctor understands patients as well as disease and has the ability to convey truthful

information in a way that does not terrorize. Fortunately, too, some patients are well poised and not easily disturbed mentally. A woman of 50 asked my opinion of the report of twenty-five pages that had been handed her as the result of a study of her case in a reputable clinic. Fourteen disease conditions had been found and were duly listed. As I finished reading I said "Well, what did you think about it all?" "Doctor," she replied, "if there had been two or three conditions reported it would have scared me stiff. But when I saw fourteen I just laughed." A pretty sensible view to take of some of these reports.

To tell a patient what ails him requires much understanding of human nature and much tact. One should be careful not to alarm unduly or to convey a wrong impression. Emerson has said "It is not the fact that imports but the effect or the impression of the fact on the mind." To tell a patient that he has a leaky heart valve or syphilis or diabetes may be to state a fact. If the effect of this unexplained statement is to convey to the layman that he has a disease that is hopeless, that will progress relentlessly to an early fatal issue when such is not the case, one has by stating a fact conveyed a wrong impression, has told an untruth. One must adapt the statement to the intelligence of the hearer and by explanation and qualification make it convey the truth that is necessary for the proper understanding of the condition and the carrying out of the advice that is to be given.

Many other features of diagnosis that present minor problems might be discussed did time permit and were it profitable to dwell on what would be agreed to without argument. Among these may be mentioned the importance of having no preconceived notion as to what is the matter when one tackles a case of illness. One should go in with an open mind, though one should not keep the mind constantly open. As G. K. Chesterton said, "The object of opening the mind as of opening the mouth is to shut it again on something solid."

Then there is the doctor whom we all know who lets his diagnosis depend too much on his pet symptoms. A peculiar luster to the eye, a tint of the skin or a special brand of cough or of pain and the doctor's mind is, if not already made up, at least strongly prejudiced. There is the bluff doctor who breezes in and with a rough and ready air, after a cursory examination, makes a cocksure diagnosis that may turn out to be correct. His more scholarly and scientific colleague sarcastically comments that this doctor doesn't know enough to hesitate or be in doubt.

One might discuss the diagnosis by exclusion, or the problem presented when two or more diseases are present rather than one, or the importance of revision of a diagnosis. One might consider further than has been done the perils from emphasizing one of the diagnostic procedures at the expense of others. "Doctor," said a patient to me, "I hope you will be different from the many physicians whom I have consulted. I hope you will examine the x-ray films less and me more." There is a good text for a sermon: in examining the films do not overlook the patient.

#### DANGER OF TOO MUCH KNOWLEDGE

There is one feature concerning which I wish to speak a little more at length. To state it paradoxically, some physicians know too much to be good diagnosticians or safe advisers. They have more knowledge than they can well handle; they are "suffocated beneath

1. The same tendency to advise unnecessary examination is seen in the office work of general practitioners and specialists and in the group or clinic. Examination by x-rays, the electrocardiograph or by the Wassermann or metabolism test would rarely add usable knowledge in the case of a patient with a rheumatic mitral stenosis and a moderate degree of congestive heart failure. On the other hand, a patient with a leaky aortic valve and threatening heart failure may present an entirely different problem. The cause of the lesion—rheumatism, syphilis, arteriosclerosis, hypertension—the possibility of aneurysm or even of an error in diagnosis with a congenital defect or a coarctation of the aorta causing the symptoms may make one or several of these tests imperative. Proper therapy may depend on their results.

a dead weight of erudition." A doctor of this type knows a multitude of facts. But these facts and their arrangement in the doctor's mind resemble the motley collection seen on the medicine shelves of the bathroom. To be of value, facts, whether they are the result of planned research or of accumulated experience, must be seen not in their isolation but in their relation to other facts. President Neilson of Smith College expressed it the other day when he said that "truth lies not in facts but in the relations between facts." The physician or surgeon may lack the ability to distinguish between major and minor symptoms of disease. He fails to realize that there are what might be called the nonessentials of diagnosis. One of these nonessentials held too close to the eye may obscure the central field of vision and the essentials may not be seen. He may be so overconscientious as to be timid, so obsessed by the laudable desire to be thorough that he putters over minutiae and overlooks the obvious. Valuable time may be lost in waiting for the blood count, the icteric index, the electrocardiogram, the x-ray film, and the golden—perhaps the arsenical—opportunity for prompt action slips by, the favorable time for operation, for giving antitoxin, or prescribing bed rest is lost.

There is such a thing as being too particular.<sup>2</sup> We may apply to medicine what Mr. Justice Cardozo said about the law: "There is an accuracy that defeats itself by overemphasis of details." At times this unfortunate stressing of the incidental is a defense reaction, a desire to appear judicially minded and to reach no conclusion until all the evidence is in. Again, following Justice Cardozo, this is an invertebrate habit of mind which thinks it is impartial because it is undecided and which regards the judicial attitude as that which refrains from judging.

To what extent should the doctor seek for these less common or even out of the way signs? How can he assess them at their proper value? Should they be taught to the undergraduate? It is not easy to give a categorical yes or no answer to these questions. As the children say, Why, that depends.

The answer will depend much on the purpose for which the diagnostic study is made. If research is the prime object, phenomena apparently the most trivial may profitably be sought and recorded in minutest detail. No preconceived notion as to their insignificance should exclude their consideration. The results may show they are of great worth. The same is true if the doctor is trying in every way to perfect himself—as he should—as a keen observer and skilled diagnostician. He should learn their value by trial. If, however, the object of the examination is to decide promptly what is the matter with the one particular individual who is before him so that this individual may be treated rationally and without delay, many symptoms may be virtually ignored, to be considered only if help is needed to remove a lingering doubt. A too meticulous concern with the finer points of diagnosis may easily lead good clinicians to lose their sense of proportion and perspective.

It would be helpful if symptoms might be classified from pathognomonic or positive—tubercle bacilli in the sputum or urine, crepitus and displacement in fractured bones, shadows like those of gallstones in the

film—down to those only rarely present or of lesser value. Extreme caution is here necessary. Even bone crepitus may be simulated by conditions other than fracture; the shadow confidently regarded as due to gallstones may be cast by a calcified gland. And symptoms low down in the scale may at times assume increased importance; for minor symptoms are by no means to be scorned. Take the case of pulmonary tuberculosis: The diagnosis is regarded as certain if the bacillus is found in the sputum. The x-ray film is a second major reliance. No further symptoms are necessary for a positive diagnosis. Yet in cases in which the x-ray revelations are doubtful and in which no tubercle bacilli are found, other symptoms are by no means negligible: cough, rales, emaciation, anemia, fever, rapid pulse. And such symptoms may be of importance from another point of view. They may enable one to estimate the gravity of the illness more definitely than is possible by the x-rays or by the study of the sputum, for the number of bacilli or the extent of the diseased area as revealed by the x-rays do not always declare the seriousness. Such symptoms, therefore, should be discussed before students and considered at the bedside.

An extreme view of this aspect of the nonessentials that I have presented is taken by some who say that undergraduates should not be taught the unusual, the less important or the imperfectly understood in diagnosis. Why, they say, should the practical man at the bedside be concerned with systolic apical murmurs? They generally mean little and are often misinterpreted. Why should he bother about slight variations in blood pressure, poorly understood features of x-ray films? Diagnosis based on fundamentals and essentials is "good enough" for the ordinary doctor.

This extreme view seems to me a mistaken one. As I have said, the dangerous doctor is the mediocre man who is unaware of his own limitations and the pitfalls of practice and does not know the unusual when he meets it. The most reliable man is he who knows the most and knows his own ability and his limitations.

Another reason why one may object to this "good enough for the ordinary doctor" attitude is that, while some symptoms like the apical systolic murmur, to use this as an example, often have no sinister meaning, sometimes they mean much. Because physicians frequently misinterpret is not a valid reason for ignoring the murmur or for discarding the stethoscope and all it stands for. It is rather an indictment of the profession in general for lack of accurate knowledge concerning this murmur. Is it not the duty of the schools and the leaders in medicine, themselves, to learn more about such things and to teach more efficiently?

The wisdom of the policy of teaching in the undergraduate courses only the essentials of medicine is debatable for another reason. By compulsory education in our public schools all children may be taught to read and to write a legible hand. The standard of the mass is thus raised. But the child so taught does not necessarily become an educated man in the higher sense of that term or an author or even a discriminating judge of good literature. This has been pointed out by an acute observer, Prof. Wilbur Abbott, who shows how popular education may lower the standards of the best writers. For these writers unconsciously or consciously are led to write down to the level of the reading public, now become so enormous in number, with which is the market for their wares. Many of the histories and biographies of the day, best sellers

2. Bichat expressed it when he said there were two perils equally to be feared: that of particularizing too much and that of generalizing too much. The second, he said, leads as well as the first to false results. (Quoted by Bouillaud, *Traité de maladies du cœur*, p. 254).

by virtue of attractive style and the atmosphere of romance, are yet lacking in the elements that should, and formerly did, mark truthful, scientific history and biography. In a similar manner may not the plan of educating doctors only in the essentials, the three R's of medicine, involve a lowering of the standard for the mass of doctors? May not this in turn drag to a lower level the superior man, the specialist, the investigator?

#### RESEARCH

Then, what seems to me an unfortunate attitude has been taken by some who say that there should be a sharp line of demarcation between the ordinary practicing physician, whose duty is to do the daily grind of telling what is the matter with and treating the patient, and a higher type of scientific clinician whose function is investigation. Sir Thomas Lewis, who so richly deserves the distinguished medal for his research service to medicine and whose opinion on problems of practice cannot be lightly brushed aside, favors this distinction. The one type of doctor would be concerned with what he calls "curative medicine" ministering to the immediate needs of sick individuals, and the other with progressive medicine or "clinical science." The latter group would search for new facts, the former would simply apply knowledge already known.

I agree with nearly all that Sir Thomas says in his stimulating paper of eight years ago.<sup>3</sup> But it seems to me that there is an implied slur on the aims and abilities of the general practitioner that should not go unchallenged. There are many poor practitioners, one has to admit. But is it fair to judge all practitioners by the poorest, even though they be many? Not all practitioners, not even a majority of them, are of mediocre ability; not all are merely commercial in their aims; not all make their diagnoses by "no process of mental reasoning" but by a sort of glorified intuition derived from their experience as craftsmen in the art of guessing, *ars conjecturalis*, to use the expression of Celsus; not all drop their contact with the laboratory and lose the spirit of research as soon as they are graduated. There can be no objection to the plan of intensive investigation of clinical problems by all-time qualified men in wards entirely under their control. No reproach can be cast on workers in pure laboratory research or in the most refined type of clinical investigation. All power to the small number who are qualified to carry on work of this kind, and richest opportunity! But arbitrarily to put into the class of the inferior the bright, industrious, well informed practitioner, specialist or part-time hospital physician or teacher who, imbued with the spirit of research, sees in every new and interesting case or group of cases a small problem for investigation—what is the matter with the patient, with all that diagnosis implies—seems unfair and unjust. It is discouraging to those who make up, and must of necessity for several years make up, the bone and sinew of our profession (at least in the United States and Canada) to be told that they must abandon hope who elect to enter the ranks of the general practitioner. Moreover, is it not rather extravagant to declare that little or nothing new can be expected in the future from the "curative" practitioner or specialist? That in making bedside observations he will be working in a field whose fertility is all but exhausted? That there is no prospect that any future Addison, Charcot or Skoda will add anything of value

to medicine? That he must be content to do the necessary daily drudgery, that the "clinical science" investigator will do what counts?

It seems to me that these views of Sir Thomas are not sound.

#### CONCLUSION

In summing up, I realize that there are in this paper omissions and inconsistencies. Nor can I pretend to have offered completely satisfactory solutions to the problems of present day diagnosis. The train of thought, not always connected, is that diagnosis—a process that is necessary in the everyday life of the practitioner of medicine, using the term "diagnosis" as meaning more than a perfunctory labeling of a disease—implies the application of more knowledge than any one human being can acquire, remember or properly utilize. The doctor must then have help which makes qualified laboratories and qualified specialists singly or in groups a necessity.

There has been pointed out the importance of perspective in diagnosis, the ill effects that come from being too particular regarding minute details, yet it has been contended that the practitioner must know of their existence, for minute details may mean much.

Reference has been made to the unwisdom of teaching students merely the so-called essentials. It has been pointed out that such a course may not only make less efficient practitioners but lower the morale and high standards of productive research. The value of "majoring" for the undergraduate and practitioner has been stressed.

I have expressed regret that the line of cleavage that has to be drawn—and such a line is a necessity—between the practitioner and the investigator in clinical science should be so sharply and so heavily drawn as unduly to discourage the one worker and relatively, at least, unduly to exalt the other.

It has seemed as though in the last few years there has been a tendency toward better relations between practitioners, specialists, laboratory investigators, hospitals for the care of patients, hospitals and institutes whose primary object was research, and that harmony and a spirit of cooperation have been gradually displacing the old antagonism, jealousy and misunderstanding. I fear that insistence too sharply on the separation of these two types of doctors may lead to the development of a deadening inferiority complex in the one type of worker and of a superiority complex in the other that will not improve the efficiency of either group and that in the end may have unfortunate results both in the practice of medicine as an art and in the science of medicine in the way of productive research. I endorse most heartily the plea that has been made by Soma Weiss<sup>4</sup> for closer relations rather than wider separation between all these groups in the belief that cooperation will be mutually beneficial.

These problems, to repeat, will be worked out largely by evolution, by trial and error at the bedside of the patient in the home and in the teaching hospitals of medical schools. Their study by capable practitioners and educators has already helped toward clarification. All these efforts should be continued and encouraged.

Finally, unless there is now impending or shall later come upon us a second Dark Age in Science when all progress will be at a standstill, these problems never will be settled. For medical knowledge is not static, it is in a state of flux; new facts and new generalizations

3. Lewis, Sir Thomas: Observations on Research in Medicine: Its Position and Its Needs. Brit. M. J. 1: 479 (March 15) 1930.

4. Weiss, Soma: Clinical Medicine as a University Discipline. Harvard Medical Alumni Bulletin, April 1936.



are constantly being established, new social and economic theories and practices are being advocated and adopted. All this means there will have to be frequent readjustments. One may repeat what was said a hundred years ago by a wise clinician, Peter Latham: "Whenever in medicine anything like a discovery has been made, anything which has had the show of a principle or a law, a large surrender of cherished opinions has always followed, and knowledge has seemed to begin its career afresh from a new starting place." May I venture to predict and to express the hope that one hundred years from now medical knowledge will seem to begin its career afresh from a new starting place, for it will still be progressing.

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## EVALUATION OF DRUGS COMMONLY EMPLOYED AS DIAGNOSTIC AIDS IN CLINICAL MEDICINE

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The administration of a drug to estimate abnormal structure or function of an organ in the body is becoming increasingly common as a diagnostic aid in medicine. Many of the drugs in use for this purpose are administered by a technical assistant and, through popular usage, have come to be looked on merely as playing a role in a laboratory procedure. Drugs so used, therefore, have tended to lose their identity in the minds of physicians as substances capable of inciting specific tissue and cellular activity. Although much has been added to our knowledge of pathologic physiology by their clinical application, their use is not without danger. The use of a chemical in diagnosis is not justifiable if its possible toxicity outweighs the value of the information which may be derived.

For many years clinicians and physiologists have attempted, by the use of certain drugs, to devise means of determining altered organic function, of diagnosing specific tissue damage and of arriving at an accurate prognosis. A great deal has been learned, for example, about diffuse disease of the liver and kidneys, particularly in the late stages, but much is to be learned concerning methods of diagnosis of disease in its early stages when treatment may be more effective.

What, then, is the present status of drugs used as diagnostic aids? What toxic effects are to be expected? What are their limitations and contraindications? Are data obtained from diagnostic tests superior to information gained by a carefully taken history, a thorough physical examination and a few simple laboratory procedures? Answers to these questions must be sought by a critical analysis of methods in use and by a knowledge of the action of drugs employed in diagnosis and of the idiosyncrasies of the particular patient concerned.

Comprehensive knowledge of the action of chemicals in the body will suggest to the discerning and ingenious physician many diagnostic uses. Thus the paralyzing action of atropine on the vagal endings in the heart may be used to differentiate heart block from brady-

cardia due to excessive vagal tone. Similarly, detailed knowledge of the mode and rate of excretion of drugs from the body may be judiciously applied to diagnostic problems, as when Rowntree and Geraghty<sup>1</sup> made their classic study of phenolsulfonphthalein as an aid to the estimation of renal function. Again, recognition of the opacity of iodine to roentgen rays has permitted the building of certain drugs to specification to meet particular diagnostic problems associated with the visualization of body cavities. Thus Forrestier and Sicard<sup>2</sup> took advantage of the fact that unsaturated physiologically inert lipids combine with enough iodine to be useful with the roentgen ray to visualize pulmonary cavities or even the spinal canal. By using iodine to halogenate phenolphthalein, Cole, Copher and Graham<sup>3</sup> changed a laborious and indirect liver excretory test to a roentgen procedure helpful in determining not only liver excretion but also the presence of the functioning gallbladder. And by iodizing relatively simple organic compounds which are rapidly excreted by the kidney, Zwick<sup>4</sup> developed efficient drugs for the roentgen visualization of the whole urinary tract.

A point of interest with regard to many drugs used for diagnostic purposes is expense. All organic compounds containing iodine are expensive, because iodine is costly and because it requires sound technical skill to maintain uniform composition in iodized compounds.

The chief drugs used for diagnostic purposes are thoroughly described in New and Nonofficial Remedies. Particular care is taken by the Council on Pharmacy and Chemistry of the American Medical Association to call attention to toxic symptoms or untoward effects from the use of these drugs.

Drugs for specific diagnostic purposes may be classified according to the body systems to be examined. Such a classification is suggested in the accompanying table. Or they may be classified according to the application of action: (1) those with specific pharmacologic effect, such as histamine to stimulate gastric secretion; (2) those with specific fates in the body, such as dextrose for testing the carbohydrate tolerance of the liver; (3) those which are selectively and quantitatively excreted by certain organs, such as phenolsulfonphthalein for testing renal function or "rose bengal" for estimating the efficiency of the liver in removing a foreign substance (dye) from the blood; (4) those which are opaque to roentgen rays and are only slightly or slowly absorbed into the body, such as barium sulfate for roentgenographic visualization of the gastro-enteric tract or iodized oils for roentgenologic examination of the lungs or spinal canal; (5) those which are opaque to roentgen rays and also selectively and quantitatively excreted by certain organs, such as phenol tetraiodophthalein for roentgen visualization of the gallbladder, and sodium ortho-iodohippurate for roentgenologic examination of the urinary tract, and (6) those which permit roentgenographic contrast and are rapidly absorbed, such as ethylene for examination of the cerebral ventricles.

1. Rowntree, L. G., and Geraghty, J. T.: An Experimental and Clinical Study of the Functional Activity of the Kidneys by Means of Phenolsulfonphthalein, *J. Pharmacol.* 1: 579 (April 25) 1910.
2. Forrestier, J., and Sicard, J. A.: Radiological Exploration with Iodized Oil, *Brit. J. Radiol.* 31: 239 (July) 1926; *Ann. Clin. Med.* 41: 869 (May) 1926; *Radiology* 7: 385 (Nov.) 1926. Sicard, J. A., and Forrestier, J.: *Diagnostic et thérapeutique par le lipiodol: Clinique et radiologie*, Paris, Masson & Cie, 1928.
3. Cole, W. H.; Copher, G. H., and Graham, E. A.: Simultaneous Determination of Hepatic Function, *J. A. M. A.*

From the Departments of Medicine and Pharmacology of the University of California Medical School.  
Read before the Section on Pharmacology and Therapeutics at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 17, 1938.

us Urography by Means of the Sodium Acid, *J. A. M. A.* 65: 1403 (Nov. 8) 1911; 101: 1853 (Dec. 9) 1933.

ROENTGENOGRAPHIC VISUALIZATION OF  
BODY CAVITIES

After several years of great enthusiasm in the use of iodized oils for roentgenographic visualization of various body cavities, physicians have come to realize the slowness with which these agents may be absorbed and the consequent danger of foreign body reactions at the point where they may lodge. Untoward reactions following the injection of iodized oil into the subarachnoid space of the spinal canal does occur, as has been recently reported by Brown and Carr.<sup>5</sup> The risk of injury from intraspinal injection of iodized oils for localization of cord tumors should be minimized, for example, by careful efforts to remove all trace of the oils at subsequent operation. The Council on Pharmacy and Chemistry has issued a comprehensive report on the history, scope and limitations of iodized oils for roentgenographic visualization of body cavities.<sup>6</sup> This

tions for the purpose than is the case with any other diagnostic agent. Giving full efficiency, it is practically free from untoward effects, is not absorbed unless there is ulceration, is easily administered and is not expensive.

Similar satisfaction cannot be expressed with the drugs used to promote gastric secretion for analysis. Neither alcohol nor histamine is as safe or efficient as may be desired. Bloomfield and Polland's<sup>9</sup> careful studies on the diagnostic use of histamine clearly indicate its scope and limitations. It would seem that acetylcholine or beta-methyl-acetylcholine might be surveyed clinically from the standpoint of diagnostic use for collection of gastric juice. They have been employed to assist in the diagnosis of colonic conditions.

## DRUGS USED TO TEST EXCRETORY FUNCTION

Criteria for the recognition of impaired excretory function of an organ have accumulated slowly during

*Acceptable Drugs for Diagnostic Purposes*

Body System and Purpose	Drug	Dose and Administration
Body cavities: For roentgenographic visualization..... (For scope and limitations see THE JOURNAL Dec. 3, 1932, p. 1946)	Campidol emulsion N.N.R. .... Lipiodol N.N.R. .... Lipiodol radiologique ascendant N.N.R. .... Lipiodine N.N.R. .... Ethylene U.S.P. ....	1-20 cc. for retrograde urography 1-5 cc., depending on use 1-2 cc. intraspinally 5-20 cc., depending on use 10 cc. intraspinally
Eye: For dilating pupil to permit retinal exam- ination For detection of corneal lesions.....	Cocaine hydrochloride ..... Eucatropine N.N.R. .... Homatropine hydrochloride N.N.R. .... Fluorescein soluble U.S.P. ....	1-2 drops 1 per cent solution 2 drops 5-10 per cent solution 2 drops 1 per cent solution 1-2 drops 1 per cent solution
Gastro-enteric tract: For collection of gastric juice..... For roentgenographic visualization.....	Alcohol "C.D." Histamin Barium	50 cc. of 7 per cent solution 0.5 mg. subcutaneously 100-150 Gm. orally
Kidney function .....	Phenolsulfonphthalein U.S.P. ....	1 cc. of 0.6 per cent solution, intramuscularly or intravenously
Liver function (See Now and precautions)	Bromsulphalein N.N.R. .... Iodophthalein soluble U.S.P. .... Phenoltetrachlorophthalein N.N.R. .... Phentetothalein sodium N.N.R. ....	2 mg. per Kg. intravenously in 5 per cent solu- tion 4 Gm. orally, or 2-2.5 Gm. in 24-28 cc. freshly distilled and sterilized water, intravenously 50 to 400 mg. of disodium salt intravenously 4 Gm. orally, or 40 mg. per Kg. in 8 per cent freshly sterilized water solution, intrave- nously
Pyelography (Consult for special)	Rose bengal (tetra-iododichlorofluorescein)..... Diodrast N.N.R. .... Hippuran N.N.R. .... Neo-Iopax N.N.R. .... Skiodan N.N.R. ....	100 mg. in 10 cc. sterile physiologic salt solu- tion, intravenously 7 Gm. in 20 cc. of sterile water, intravenously 12 Gm. orally; 12 Gm. in 25 cc. of sterile water intravenously; 15 per cent sterile solution for retrograde administration 15 Gm. in 20 cc. of sterile water, intravenously 350 mg. per Kg. in 20 per cent sterile solution, intravenously

report should be studied by physicians contemplating the use of these agents for the first time.

Using gaseous agents for providing contrast in the roentgenologic examination of the ventricles of the brain is also a hazardous procedure. Aird's<sup>7</sup> thorough search for a suitable gas resulted in the choice of ethylene. This is a great improvement over air, but untoward effects are still possible. If they occur, it is tempting to blame the anesthesia used and to forget the risks involved in introducing a relatively large volume of gas into the cerebrospinal canal.

## GASTRO-ENTERIC TRACT

Cannon's<sup>8</sup> brilliant pioneering x-ray investigation of intestinal motility led to the introduction of a drug, barium sulfate, which remains closer to ideal specifica-

the past few decades. By means of the ingestion or the injection of tinctorial substances, biologic products, and radiopaque preparations introduced recently,<sup>10</sup> sufficient information has been accumulated to permit the physician to identify the impaired organ and to determine to some extent the degree of damage to which it has been subjected.

One may question, however, the justification for using so dangerous a drug as thorium dioxide for such a purpose under any circumstance.

Drugs used to determine the excretory function of the liver are limited almost entirely to a few dyes whose value lies in the ability of the liver to remove them from the blood stream into the bile. The two most commonly used dyes, rose bengal and bromsulphalein, when retained in the blood plasma, may be visualized and measured quantitatively by colorimetric methods. The

5. Brown, H., and Carr, J. L.: The Effect of Lipiodol in the Subarachnoid Space, to be published.

6. Dangers of the Injection of Iodized Oils, Report of Council on Pharmacy and Chemistry, J. A. M. A. 99: 1946 (Dec. 3) 1932.

7. Aird, R. B.: Experimental Encephalography with Anesthetic Gases, Arch. Surg. 32: 193 (Feb.) 1936.

8. Cannon, W. B.: The Movements of the Stomach Studied by Means of the Roentgen Rays, Am. J. Physiol. 1: 359, 1898; The Movements of the Intestines, Studied by Means of the Roentgen Rays, ibid. 6: 251, 1902.

9. Bloomfield, A. L., and Polland, W. S.: Gastric Anacidity: Its Relation to Disease, New York, Macmillan Company, 1933.

10. Yater, W. M., and Whitmore, E. R.: Histopathologic Study of Tissues of Sixty-Five Patients Injected with Thorium Dioxide Sol for Hepatosplenography, with a Follow-Up Study of Ten Old Cases, Am. J. M. Sc. 195: 198-205 (Feb.) 1938.

technic of the rose bengal test was described in 1924<sup>11</sup> and, as first proposed, the degree of excretion of the dye was estimated by colorimetric readings. Althausen, Biskind and Kerr<sup>12</sup> recently have shown that the test could be more sensitive and the limits of the test 5 per cent lower by using the spectroscope instead of the colorimeter. The experience obtained from the performance of this test on 302 patients at the University of California Hospital have been reported recently.<sup>13</sup> For the purpose of this study, 10 cc. of a 1 per cent solution of rose bengal (di-iodo-tetrachlor fluorescein) in physiologic solution of sodium chloride was injected intravenously. A specimen of blood was removed at two minutes to be used as the standard for maximum distribution of the dye in the blood stream. The results were classified according to the amount of the dye retained in the blood plasma. Tests showing a retention of from 55 to 65 per cent in eight minutes and from 35 to 45 per cent in sixteen minutes were considered as slightly positive, those from 66 to 75 per cent and from 46 to 55 per cent respectively as moderately positive, and those in excess of 75 and 55 per cent respectively as markedly positive. In intrinsic diseases of the liver this test was shown to be extremely satisfactory, since retention of the dye in patients with acute hepatitis showed a positive result in 94 per cent of cases and in patients with chronic hepatitis a positive result in 96 per cent of cases.

The dye bromsulphalein has come into more general use than rose bengal as a test of the excretory function of the liver. In the performance of this test 5 mg. of the dye per kilogram of body weight<sup>14</sup> is injected intravenously. At the end of one hour a single specimen is removed, which eliminates the three samples of blood required in performing the rose bengal test. The retention of 10 per cent or more of the dye is considered abnormal and indicative of liver damage. Results comparable to those obtained with the use of rose bengal have been reported by Magath.<sup>15</sup> This author found a retention of bromsulphalein in 96 per cent of cases in which there was evidence of parenchymal hepatic damage.

It has been stated<sup>16</sup> that the retention of dye may more or less parallel the degree of icterus. However, some modification of this statement must be made, depending on the type of structural alteration of the liver. In patients recovering from "catarrhal jaundice" the rose bengal test may show a return to normal function of the liver while the icterus index is still considerably elevated. Furthermore, it is well known that hepatic damage may exist without jaundice and ascites. Such alteration may be suspected in a patient with a slightly enlarged liver, but impairment of function may

be determined by the dye excretion test. An example of this situation is given in the following case:

*Enlarged liver, clinically asymptomatic; macrocytic hypochromic anemia; profuse menses; impaired hepatic function.*

*History.*—M. M., a married woman, aged 33, Italian, came to the medical division of the outpatient department of the University of California Aug. 4, 1937, because of weakness, loss of weight and profuse menses. For eight months prior to entry a variety of symptoms had developed, among which were irregular episodes of profuse vaginal bleeding and generalized pruritus. An intractable insomnia had developed and she had had hot and cold flushes passing over the body. There was a tendency toward nervousness and excessive perspiration. Since childhood it had been her custom to consume not less than 1 quart of wine daily. In recent years this amount was frequently greatly exceeded and on occasions was supplemented by the use of whisky.

*Examination.*—The patient appeared well developed, in no obvious distress but with slight evidence of loss in weight. The skin was pale, warm and moist. Lymphadenopathy was not demonstrable. The thyroid gland was not enlarged. The liver edge was felt 4 cm. below the right costal margin. The edge felt smooth, was not tender and had a sharp border. There was a small mass adherent to the right lateral border of the uterus.

*Laboratory Procedures.*—Examination of the blood showed red blood cells 3,100,000 per cubic millimeter, hemoglobin 60 per cent (8.4 Gm.), and leukocytes 11,600 per cubic millimeter. The differential count was filamented polymorphonuclear leukocytes 57 per cent and nonfilamented 19 per cent, lymphocytes 21 per cent and monocytes 2 per cent. The bleeding time was five minutes and the platelets were 110,000 per cubic millimeter. A specimen of blood clotted in ten minutes (method of Lee and White) and showed a volume of 33 cc. of packed cells per hundred cubic centimeters of whole blood. The mean corpuscular volume was 100 cubic microns, the volume index 1.14 and the color index 0.9. The basal metabolic rate was 36.5 per cent plus. The rose bengal test of liver function showed a retention of 62 per cent of dye at eight minutes and 44 per cent at sixteen minutes. The icterus index was 6.

*Course of Illness.*—The patient entered the University of California Hospital, where, following dilation and curettage and the implantation of radium in the uterus there was a cessation of vaginal bleeding. Six months later she was examined in the outpatient department. On this occasion the liver was still enlarged. Examination of the blood showed 80 per cent hemoglobin (11.2 Gm.) and 3,450,000 erythrocytes per cubic millimeter. The icterus index was 7. The rose bengal test of liver function showed retention of 64 per cent of dye at eight minutes and 48 per cent at sixteen minutes.

There are many conflicting statements in the medical literature relative to the value of drugs used to determine the excretory function of the kidneys. The test most commonly used was described by Rowntree and Geraghty<sup>1</sup> in 1910 and depends on the ability of the kidneys to remove the dye phenolsulfonphthalein from the blood stream over a period of two hours. There is little doubt that the failure of the kidneys to remove the dye gives evidence of their impaired function, but there is considerable doubt as to the value of a single test in determining prognosis. Christian and O'Hara<sup>17</sup> were of the opinion that the two hour test gave little or no evidence of early stages of renal disease. Chapman and Halsted<sup>18</sup> believed that the test could be made more sensitive by examining specimens of urine at intervals of fifteen minutes instead of two specimens at hourly intervals. Recently MacKay and Rytand<sup>19</sup> reported the phenolsulfonphthalein test as being of more value

11. Delprat, G. D.; Epstein, N. N., and Kerr, W. J.: A New Liver Function Test; Elimination of Rose Bengal when Injected into the Circulation of Human Subjects, *Arch. Int. Med.* 34: 533-534 (Oct.) 1924.

12. Althausen, T. L.; Biskind, G. R., and Kerr, W. J.: The Rose Bengal Test of Hepatic Function, *J. Lab. & Clin. Med.* 18: 954 (June) 1933.

13. Wever, G. K.; Althausen, T. L.; Biskind, G. R., and Kerr, W. J.: Liver Function in Hepatic and Extrahepatic Diseases: I. The Results of Clinical Experience with 326 Cases, *Am. J. Digest. Dis. & Nutrition* 2: 93-99 (April) 1935. Biskind, G. R.; Althausen, T. L.; Wever, G. K., and Kerr, W. J.: Liver Function in Hepatic and Extrahepatic Diseases: II. Clinicopathological Correlation and Evaluation of the Usefulness of Liver Function Tests, *ibid.* 2: 167-172 (May) 1935.

14. O'Leary, P. A.; Greene, C. H., and Rowntree, L. G.: Diseases of the Liver: VIII. The Various Types of Syphilis of the Liver with Reference to Tests for Hepatic Function, *Arch. Int. Med.* 44: 155-194 (Aug.) 1929.

15. Magath, T. B.: The Takata-Ara Test of Liver Function, *Am. J. Digest. Dis. & Nutrition* 2: 713-716 (Feb.) 1936.

16. Sprunt, T. P.: The Diagnosis and Treatment of Cirrhosis of the Liver in Its Early Stages, *J. A. M. A.* 109: 1945-1949 (Dec. 11) 1937.

17. Christian, H. A., and O'Hara, J. P.: *Oxford Med.* 3: 631, 1925.

18. Chapman, E. M., and Halsted, J. A.: The Fractional Phenolsulfonphthalein Test in Bright's Disease, *Am. J. M. Sc.* 186: 223-232 (Aug.) 1933.

19. MacKay, E. M., and Rytand, D. A.: Significance of the Phenolsulfonphthalein Test of Renal Function, *Arch. Int. Med.* 55: 131 (Jan.) 1935.

in determining renal function than the estimation of urea clearance or the tests for maximum specific gravity of the urine. Elliot and Nuzum<sup>20</sup> and Don<sup>21</sup> concluded, from a similar study, that there was a failure of these three tests to agree closely and that whatever agreement existed between them was little more than could be expected as a chance occurrence.

It is the opinion of many investigators<sup>22</sup> that none of the tests employed will give accurate information as to the possible duration of the disease or the probable degree of return of function. The phenolsulfonphthalein test, however, when used at monthly intervals, may offer an approximate gage of the extent of improvement in the particular function tested. It is to be emphasized that the clinical examination of the patient, the enumeration of the cellular elements, the various types of casts in the urine and the determination of the ability of the kidney to concentrate must still be regarded as of foremost importance.

Both the liver and the kidneys perform many functions concerned with metabolism. A number of so-called metabolic tests offering many practical and theoretical possibilities have been devised in an attempt to test these functions.

#### CHEMICALS USED TO DETERMINE FUNCTIONS OF METABOLISM

Food substances, when used for the purpose of testing a metabolic function of an organ, may in a restricted sense be considered as acting similarly to chemicals or drugs. So far as tests for metabolic functions are concerned, however, with few exceptions little has been done that is of clinical value. It is well known that the liver plays an important role in protein metabolism and that variations in plasma protein occur in association with injury to the hepatic parenchyma.<sup>23</sup> Bollman, Mann and Magath<sup>24</sup> have shown that total extirpation of the liver is followed by a cessation in the formation of urea and a rise in the concentration of uric acid in the tissues and body fluids. This does not occur with partial hepatectomy. The statement is made that a considerable portion of the liver must be damaged before its function in metabolism is affected materially, and this precludes the possibility of devising a test of diagnostic or prognostic value. Tests concerned with the metabolism of fat and cholesterol are equally disappointing. This subject was reviewed recently by Epstein and Greenspan<sup>25</sup> and by Snell and Magath,<sup>26</sup> and those interested are referred to these articles for further study.

One of the functions of the liver is to prevent the accumulation of excessive quantities of dextrose in the blood stream. The modified dextrose tolerance test

has been designed as a test of this function.<sup>27</sup> This test depends on the ability of the liver to maintain the blood sugar at a certain level following the administration of dextrose, insulin and water. Wever and his associates<sup>13</sup> were able to show by this method, in 92 per cent of patients studied with acute hepatitis, variations in the values for blood sugar which indicated a low reserve of glycogen. This figure corresponds closely to the results obtained with the rose bengal test. In chronic hepatitis and neoplasms of the liver the tests failed to agree as closely. The galactose tolerance test<sup>28</sup> also is used as a diagnostic procedure to determine hepatic function. Similar to the dextrose tolerance test, it may be of aid during the period of maximum damage to the liver cells. However, on account of the high degree of reparative power of the liver, variations in the metabolic function may be expected to occur. The newly formed cells may participate in metabolism of glycogen and aid in maintaining a normal level of blood sugar. Therefore a test showing a normal reaction does not always exclude injury to the liver cells.

#### ROENTGENOGRAPHIC VISUALIZATION OF EXCRETORY FUNCTION

Cole, Copher and Graham<sup>3</sup> first recognized the value of using iodine to halogenate phenolphthalein in order to obtain the advantage of roentgenologic examination of hepatic and cholecystic excretion and visualization of the gallbladder. This stimulated Zwick's search for an iodized compound which would be rapidly eliminated by the kidneys in sufficient concentration to permit roentgenographic study of the urinary tract. Many drugs can be used for both these purposes. For cholecystography rose bengal might be used if the required concentration were not toxic, and the bromiodophenolphthaleins might be studied. But practically only two tetraiodo derivatives are used, soluble iodophthalein U. S. P., in which the iodine is attached to the phenol rings, and phentetiothalein sodium N. N. R., in which the iodine is attached to the phthalein radicle.

As reflected in the comments of the Council on Pharmacy and Chemistry on phentetiothalein sodium N. N. R., clinical opinion favors this drug rather than the pharmacopeial soluble iodophthalein for visualization of the gallbladder and simultaneous test of hepatic function. It is claimed to be better tolerated and more efficient. However, its use is contraindicated in uremia or myocardial insufficiency, and caution is enjoined in jaundice. The technic of administration is fully explained in New and Nonofficial Remedies.

For roentgenography of the urinary tract, the Council has approved four of the many proposed for inclusion in New and Nonofficial Remedies: diodrast, hippuran, neo-iopax and skiodan.

For urography, diodrast N. N. R. has become very popular, probably because the relatively small amount necessary to give the required concentration for effectiveness reduces the cost in comparison with similar agents. But untoward reactions occur only too frequently. These are nausea, vomiting, flushing, eruptions of the skin, dyspnea and cyanosis. The drug also causes a considerable fall in blood pressure. Dehydration and fasting of a patient before the compound

20. Elliot, A. H., and Nuzum, F. R.: Evaluation of Measures of Renal Function in Persons with Arteriosclerotic Bright's Disease, *Arch. Int. Med.* 57: 1151-1163 (June) 1936.

21. Don, C. S. D.: Tests for Renal Function, *Brit. M. J.* 2: 54 (July 10) 1937.

22. Addis, Thomas, and Oliver, Jean: The Renal Lesions in Bright's Disease, New York, P. B. Hoeber, Inc., 1931. Ellis, L. B., and Weiss, Soma: Normal Variations in Renal Function Tests with Discussion of Their Physiologic Significance, *Am. J. M. Sc.* 186: 233-241 (Aug.) 1933. Elliot and Nuzum.<sup>20</sup> Don.<sup>21</sup>

23. Kerr, W. J.; Hurwitz, S. H., and Whipple, G. H.: Regeneration of Blood Serum Protein: II. Influence of Diet upon Curve of Protein Regeneration Following Plasma Depletion, *Am. J. Physiol.* 47: 370-378 (Dec. 1) 1918.

24. Bollman, J. L.; Mann, F. C., and Magath, T. B.: Studies on the Physiology of the Liver: VIII. Effect of Total Removal of the Liver on the Formation of Urea, *Am. J. Physiol.* 69: 371-392 (July) 1924; X. Uric Acid Following Total Removal of the Liver, *ibid.* 72: 629-646 (May) 1925.

25. Epstein, E. Z., and Greenspan, E. B.: Clinical Significance of the Cholesterol Partition of the Blood Plasma in Hepatic and Biliary Diseases, *Arch. Int. Med.* 58: 860-890 (Nov.) 1936.

26. Snell, A. M., and Magath, T. B.: The Use and Interpretation of Tests for Liver Function: A Clinical Review, *J. A. M. A.* 110: 167-174 (Jan. 15) 1938.

27. Althausen, T. L., and Mancke, R.: Kombinierte Leberfunktionsprüfung (Insulin-, Glykose- und Wasserbelastung), *Arch. f. klin. Med.* 170: 294-301 (March 25) 1931.

28. Bauer, Richard: Unsere Kenntnisse über Leberfunktion und ihre Verwertung für die Klinik, *Wien. klin. Wchnschr.* 45: 1577-1581 (Dec. 23) 1932. White, F. S.: The Galactose Tolerance and Urobilinogen Tests in the Differential Diagnosis of Painless Jaundice, *Am. J. Digest. Dis. & Nutrition* 4: 315-325 (July) 1937.

is injected is recommended as a way to reduce the severity of its effects. It is contraindicated in disorders of the liver, nephritis, uremia, tuberculosis and hyperthyroidism. Recently Robb<sup>20</sup> has used this drug for roentgenologic examination of the heart chambers following rapid injection into the cephalic vein.

Zwick's extensive survey of compounds suitable for urography led finally to a choice of sodium orthoiodohippurate (hippuran N. N. R.) as the one closest to the ideal. It is less toxic than other similar agents, and may even be administered orally. Neo-iopax N. N. R., a diiodopyrodine derivative like diodrast, produces local irritation and other reactions at the site of injection. It produces untoward systemic effects similar to diodrast.

#### CONCLUSION

Drugs are usually considered to be related solely to therapeutics. Knowledge of the action of chemicals on living things, however, may also be applied to many diagnostic problems in medicine. If such application is made, the chemical used for a diagnostic purpose should be treated as a drug quite in the same manner as when its pharmacologic action is applied in therapy. In the diagnostic use of drugs, as when they are employed for treatment, the total physiologic action of the chemical agent must be kept in mind. A most important consideration is that the physician should carefully weigh the possible hazard from the use of the drug against the value of the knowledge he might gain by giving it.

Among the general physiologic actions of drugs which the wise physician will consider in using drugs for diagnostic purposes are local actions at the point of administration, relative rates of absorption and excretion, the fate of the chemical in the body and its mode of excretion, possible systemic reactions and untoward effects, and the relation of dosage to these effects.

#### ABSTRACT OF DISCUSSION

DR. FRANK NUZUM, Santa Barbara, Calif.: The review we have just heard was most impressive. I am reminded of the statement attributed to Dr. P. J. Hanzlik, that it is a good plan for the pharmacologist to prove the action of a chemical before practicing physicians use such a substance for new test material. It is my understanding that these various drugs and tests as outlined by the speakers have been carefully worked out and can be safely used by medical men. Regarding kidney function tests, I think that some medical men have the notion that the phenolsulfonphthalein and other tests are very accurate. It has come to be known that these tests are not extremely accurate and that a great deal of kidney damage must result before the present tests give evidence of such change. Recently the Goldblatt work, which has attracted so much attention throughout the country, has emphasized that the kidneys in experimental animals can be damaged to a very appreciable degree before our present clinical tests show much change. It has been assumed by experimental workers that the hypertension produced in animals by the Goldblatt plan is comparable to essential hypertension in man. Further work is needed to prove this. Kidney function tests in the Goldblatt animals may show little change, when, as a matter of fact, the kidney is badly damaged. If groups of human beings with hypertension are given three standard kidney function tests, the phenolsulfonphthalein, the Vollhard and the urea clearance, there will be a 10 per cent less efficient kidney so far as these tests are concerned as compared with groups of normal individuals and compared decade by decade. While we do get a 10 per cent less efficient renal response by the kidneys in persons with essential hypertension, conclusions

cannot be accurately drawn. These tests are undoubtedly not sensitive enough to indicate the degree of change that has actually taken place.

RUSSELL L. HADEN, Cleveland: This paper had to do with the use of drugs, but it concerned particularly the study of vital functions. We have been much interested in our clinic in studying liver functions, in seeing what we could determine from the variation in the shape and size of the red cell as an index of damage to the liver. And by running quite a large series of comparative experiments we have found that the one most common thing that happens, when the liver is damaged, is that there is a change in the size and shape of the red cell; that, if one gets an obstructive jaundice, what happens to the red cell is that it flattens out without much change in volume. So there is an increased diameter with normal volume. But when there is a parenchymatous involvement of the liver, one gets uniformly an increase in the size of the cell.

### DISEASE OF BILIARY TRACT ASSOCIATED WITH DISTURBANCES IN CHOLESTEROL METABOLISM

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AND

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NEW YORK

This paper reports the results of treatment with the low cholesterol diet previously described by Twiss and Greene.<sup>1</sup> One hundred cases of disease of the gallbladder associated with hypercholesteremia were studied. Eighty of the patients were treated medically with the low cholesterol diet; a control group of twenty-one patients with hypercholesteremia did not receive the low cholesterol diet. Twenty surgical patients with hypercholesteremia before operation received the low cholesterol diet after cholecystectomy; for control purposes there were fourteen similar surgical patients who did not have the low cholesterol diet. A further investigation was made of twelve cases in which hypercholesteremia developed only after cholecystectomy.

The principles of treatment (as described at the 1932 session of the American Medical Association) included the establishment of three types of diet designed to fit the needs of the patient with disease of the gallbladder. These needs were determined by a careful initial diagnostic work-up. An original description of these diets and their use was published by Twiss and Greene;<sup>1</sup> a revision of the diets and the indications for their use were described in full by Bridges.<sup>2</sup>

Disturbances in cholesterol metabolism, although generally conceded to be a major contributing cause in the formation of gallstones, are as yet little understood phenomena. Comprehensive studies and reviews of the literature have been made, however, by Rolleston and McNee,<sup>3</sup> Muller,<sup>4</sup> Gardner and Gainsborough,<sup>5</sup>

From the departments of medicine and surgery of the New York Post-Graduate Hospital.

Read before the Section on Practice of Medicine at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 17, 1938.

1. Twiss, J. R., and Greene, C. H.: Dietary and Medical Management of Diseases of the Gallbladder, *J. A. M. A.* 101: 1841 (Dec. 9) 1933.

2. Bridges, M. A.: Dietetics for the Clinician, ed. 3, Philadelphia, Lea & Febiger, 1937.

3. Rolleston, H. D., McNee, J. W.: Diseases of the Liver, Gallbladder and Bile Ducts, ed. 3, New York, Macmillan Company, 1929.

4. Muller, G. L.: The Cholesterol Metabolism in Health and in Anemia, *Medicine* 9: 119 (May) 1930.

5. Gardner, J. A., and Gainsborough, Hugh: Blood Cholesterol Studies in Biliary and Hepatic Disease, *Quart. J. Med.* 23: 465-483 (July) 1930; in *Studies on Cholesterol Content of Normal Human Plasma*, *Biochem. J.* 22: 1048, 1928.

20. Robb, George, and Steinberg, Israel: Visualization of the Pulmonary Circulation in Man by Means of Peripheral Intravenous Injection, to be published.



Schönheimer,<sup>6</sup> Joslin,<sup>7</sup> Hurxthal,<sup>8</sup> Rehfuß and Nelson<sup>9</sup> and others. Cholesterol is a secondary alcohol which is present in all cells of the body and is of great practical importance as the chief constituent of gallstones. Its source is both endogenous and exogenous, the endogenous portion being derived from the normal synthesis within the body as well as from the destruction of tissues and red blood cells. Another possible source may be the endocrine glands, such as the adrenals and the ovaries. The exogenous part comes from foods high in cholesterol of animal origin, to be discussed later. The cholesterol is probably absorbed from the intestinal tract in the form of free cholesterol and esterified in the wall of the intestine, according to Sperry.<sup>10</sup> The cholesterol esters and free cholesterol are carried by the portal vein to the liver. Here the cholesterol is deesterized and excreted in the bile as free cholesterol, to be concentrated in the gallbladder and excreted in the bile into the intestinal tract. The greater part of this cholesterol is probably reabsorbed.

In discussing the relationship of cholesterol metabolism to the biliary tract, it is necessary first to recognize the fact that disturbances in cholesterol metabolism may be due to causes not related in that tract; hypercholesteremia may be present with diabetes mellitus, xanthoma, nephrosis, uremia, hypothyroidism, menstruation and pregnancy. Aschoff<sup>11</sup> has emphasized the importance of hypercholesteremia resulting from starvation and rapid loss of weight. The opposite condition of hypocholesteremia may occur with hyperthyroidism, acute infections, tuberculosis, pernicious anemia, primary degenerative disease of the liver, chronic toxic hepatitis and cardiac decompensation. It has been reported by Rothschild and Wilensky<sup>12</sup> as following the use of diets low in cholesterol.

In the biliary tract itself the most extreme degrees of hypercholesteremia are found with acute obstructive jaundice. The condition may be found to a lesser degree with chronic cholecystitis or functional disorders of the biliary tract with or without stone. Hypocholesteremia is sometimes found with starvation and with severe parenchymatous disease of the liver, which is frequently associated with conditions such as diabetes.

The dietary treatment of disease of the biliary tract associated with hypercholesteremia, as previously outlined, was based primarily on a twofold hypothesis: (a) that hypercholesteremia may result from the excessive ingestion of foods high in cholesterol and fats and (b) that a reduction of cholesterol intake by patients having hypercholesteremia causes a decrease in the amount of cholesterol in the blood. The experimental and clinical reports on both these subjects are conflicting and subject to differences of opinion in interpretation. The clinical improvement which we found to follow the use of the low cholesterol diets, however, seemed to justify further investigation as to their effect on the cholesterol level of the blood serum. The

factor of endogenous cholesterol formation may be regarded as of secondary importance in this study, as demonstrated by Rehfuß and Nelson,<sup>9</sup> Chauffard,<sup>13</sup> Leuret and Dutrenit<sup>14</sup> and other investigators.

The level of the cholesterol in the blood is usually considered to be regulated by the liver. The cholesterol content of the bile is usually dependent on the cholesterol content of the circulating blood in the absence of such factors as obstruction, as shown by McNee,<sup>15</sup> Chauffard,<sup>13</sup> and Gardner.<sup>16</sup> These investigators concluded that the cholesterol in the bile is derived directly from the blood serum and is a true excretion of the liver. Aschoff<sup>11</sup> stated that "there is a certain dependency of the cholesterol content of the bile upon that of the blood," while Rolleston and McNee<sup>3</sup> expressed the opinion that circumstances which increase the cholesterol content of the blood plasma lead to a corresponding increase in the bile. Rehfuß and Nelson<sup>9</sup> concluded: "We believe this fact is generally acknowledged by clinicians throughout the world and it forms a basis for a further study of this very important problem."

While the authorities quoted have stated that there is a definite relationship between the cholesterol levels of the bile and the blood serum, it should be added that other investigators have not been convinced of this relationship. It is not within the scope of the present report to include the numerous observations

*Cholesterol Content of the Blood and of the Concentrated Gall Bile Obtained by Drainage of Patients With and Without Hypercholesteremia*

	Blood, Mg. per 100 Cc.*	Bile, Mg., per 100 Cc.*
Hypercholesteremia (30 patients)...	239	59
Controls (12 patients).....	175	38
	64	21
Increase in cholesterol content in hypercholesteremic patients.....	36%	55%

\* The figures are averages.

and opinions in this regard. We have nevertheless investigated the cholesterol content of the concentrated gallbladder bile (or B bile of Lyon) obtained by the duodenal drainage tube from thirty patients with hypercholesteremia. The same determinations were made for a similar series of twelve patients who did not have hypercholesteremia. As shown in the accompanying table, there was an apparent comparable increase in the cholesterol content of the concentrated bile in the cases of hypercholesteremia. Cholesterol determinations were also made on the bile removed from the gallbladder at operation for a series of patients with and without hypercholesteremia. The results, however, were in both instances so extremely variable that no definite conclusions could be based on them.

The various points of view with regard to the relationship of the cholesterol and bile salts of the gallbladder bile have been reviewed in detail by Twiss and

6. Schönheimer, Rudolf: Ueber eine Störung der Cholesterinausscheidung (Ein Beitrag zur Kenntnis der Hypercholesterinämien), Ztschr. f. klin. Med. 123: 749-763, 1933.

7. Joslin, E. P.: Treatment of Diabetes Mellitus, ed. 5, Philadelphia, Lea & Febiger, 1935.

8. Hurxthal, L. M., and Hunt, H. M.: Clinical Relationships with Summary of Our Present Knowledge of Cholesterol Metabolism, Ann. Int. Med. 9: 717-727 (Dec.) 1935.

9. Rehfuß, M. E., and Nelson, G. M.: Medical Treatment of Gallbladder Disease, Philadelphia, W. B. Saunders Company, 1936.

10. Sperry, Warren: Personal communication to the authors.

11. Aschoff, Ludwig L.: Lectures on Pathology, New York, Paul B. Hoeber, Inc., 1924.

12. Rothschild, M. A., and Wilensky, A. O.: The Disturbances of the Cholesterol Metabolism as a Factor in Gallstone Formation, Am. J. M. Sc. 156: 239-248 (Aug.) 1918.

13. Chauffard, A.: La lithiase biliaire, ed. 2, Paris, Masson & Cie, 1922.

14. Leuret, François, and Dutrenit, Jean: Le cholestérol, Paris, J. B. Baillière et fils, 1934.

15. McNee, J. W.: Zur Frage des Cholesteringehalts der Galle während des Schwangerschaft, Deutsche med. Wchnschr. 39: 994-996, 1913; Cholesterin: An Account of Its Relation to Pathology and Physiology, Quart. J. Med. 7: 221, 1913-1914; Jaundice: Review of Recent Work, ibid. 16: 390 (July) 1923.

16. Gardner, J. A., and Lander, P. E.: On the Cholesterol Content of the Tissues of Cats Under Various Dietetic Conditions and During Inanition, Biochem. J. 7: 576, 1913.

Greene.<sup>1</sup> Briefly it may be stated that a relative increase in the cholesterol concentration of the gallbladder bile, particularly in the presence of infection or stasis, may result in the precipitation of cholesterol and the formation of stones. That infection is not essential to the formation of stones, however, has been emphasized by Sweet,<sup>17</sup> Rovsing,<sup>18</sup> Aschoff<sup>11</sup> and others. Metabolic disturbances associated with hypercholesteremia which result in an increased excretion of

intake was followed by an average drop in cholesterol of from 360 to 208 mg. per hundred cubic centimeters of blood. Other factors, however, which must here be taken into consideration are the improvement in the diabetic condition and the effect of an increased carbohydrate intake.

The relationship of menstruation to variations in blood cholesterol is of particular interest in view of the high proportion of females in this series of patients. An increase in blood cholesterol during menstrual periods has been shown to exist by Leuret and Dutrenit,<sup>11</sup> as well as Okey and Stewart.<sup>21</sup> The known elevation of blood cholesterol following experimental destruction of blood affords interesting speculation as to a possible relationship.

The work on which the present report is based was done in the biliary tract clinic of the New York Post-Graduate Hospital under the direction of Dr. R. Franklin Carter. The diagnostic work-up in each case included a determination under standard fasting conditions of the blood cholesterol, the icterus index and the van den Bergh reactions, as well as a history taking, physical examination, a cholecystogram and drainage of the biliary tract. Only those patients were included in this series who showed relative hypercholesteremia, having an initial blood cholesterol content of over 200 mg. per hundred cubic centimeters. Diabetes and kidney disease were ruled out by determinations of the sugar and urea nitrogen in the blood in practically all cases. Patients having jaundice or obstruction of the common duct were eliminated by exclusion of all patients having an elevation in the icterus index. Determinations of the basal metabolism were made for all patients suspected of having glandular dysfunction, those having an abnormal rate being omitted from the study.

With the medical patients, the follow-up studies included a detailed interval history and repeated drainage of the biliary tract in addition to periodic determi-

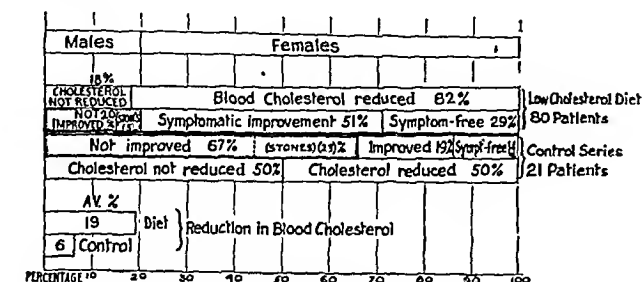


Fig. 1.—Statistics for 101 medical patients with hypercholesteremia treated with and without the low cholesterol diet.

cholesterol in the bile seem apt to result in the formation of stones, particularly when there is biliary stasis.

The effect of cholecystectomy on cholesterol metabolism has received but little study. Sweet<sup>17</sup> has shown that in the dog removal of the normal gallbladder results in a transient hypercholesteremia of about forty days' duration, the blood cholesterol at times being double the preoperative amount. It is generally considered that bile is the essential factor in the emulsification and digestion of fats. Pribram,<sup>19</sup> however, found experimentally that the essential element in the digestion of fats is not the bile but a secretion of the wall of the gallbladder. The confirmation of this finding would seem to afford a basis for further clinical studies. He said: "Patients are common who have undergone a removal of the gallbladder for biliary lithiasis who are very well for two or three years. Then, generally, after a too fatty meal or other fault in diet, a hepatic crisis occurs with congestion of the liver, epigastric pressure, intolerance of foods, the development of a hepatitis. After this accident there is a tendency to permanent and repeated relapses." The use of a diet low in fats is advised to prevent this condition.

A discussion of the use of the low cholesterol diet demands recognition of the fact that the ingestion of fats as well as foods high in cholesterol increases the blood cholesterol. Bloor<sup>20</sup> found that the feeding of fats to carnivorous and omnivorous animals results in an increase of the blood fats and cholesterol, a much greater increase resulting with herbivorous animals, such as the rabbit. The same author stressed the variability in values of the blood cholesterol, which are greater with a high fat diet and lower with a limited fat intake. The clinical application of these facts has been demonstrated by Joslin,<sup>7</sup> who found in the study of a series of diabetic persons that a lowered fat

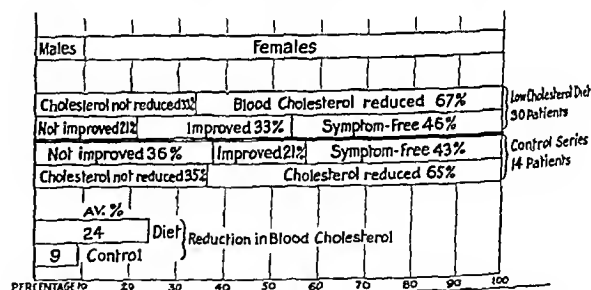


Fig. 2.—Statistics for forty-four surgical patients with hypercholesteremia treated after cholecystectomy with and without the low cholesterol diet.

nations of the blood cholesterol. With patients coming to operation, specimens of bile were obtained from the gallbladder after its removal; these were analyzed for cholesterol and bile salts, the biliary sediment was examined microscopically and bacteriologic cultures were made. The follow-up study of the medical and surgical cases was similar. The determinations of the cholesterol content of the blood and bile were made according to Sackett's modification of Bloor's method.<sup>22</sup>

17. Sweet, J. E.: The Gallbladder, Its Past, Present and Future, Internat. Clin. 50:187-226 (March) 1924.

18. Ro and Wertschütz Naunyns und der Pathogenese der Gallenstein Krankheit 103-207, 1923.

19. Pribram, hepatic pre- et postopératoire et son traitement préventif et curatif, Congrès international de l'insuffisance hépatique, Vichy, 1937, pp. 485-523.

20. Bloor, W. R.: Diet and the Blood Lipids, J. Biol. Chem. 95: 655 (March) 1932.

21. Okey, Ruth, and Stewart, Dorothy: Effect of Sterol Content of Diet upon Cyclic Variations in Blood Cholesterol in Woman, J. Biol. Chem. 97: xxxix (July) 1932.

22. Sackett, J. E.: Modifications of Bloor's Method for the Determination of Cholesterol in Whole Blood or Blood Serum, J. Biol. Chem. 64: 203 (May) 1925.

Since the increased ingestion of fats results in an increase in blood cholesterol, foods high in fats were restricted in the low cholesterol diets. The foods highest in cholesterol, as originally listed by Twiss and Greene,<sup>1</sup> include brain, egg yolk, fish roe, kidneys, liver, sweetbreads, butter, fatty fish and lard. The foods highest in fats, according to Bridges,<sup>2</sup> are avocado, bacon, butter, catfish, caviar, cheese, chocolate, cocoa, cream, egg yolk, meat fats and fried foods.

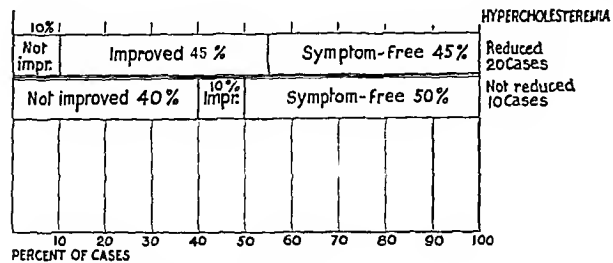


Fig. 3.—Observations on thirty surgical patients treated with a low cholesterol diet after cholecystectomy.

Our experience having confirmed the opinion of Pribram<sup>10</sup> that clinically butter and olive oil are the fats best tolerated and animal fats the least well tolerated, butter in moderate amounts is the only fat we permit in the low cholesterol diets.

When there has been no satisfactory reduction in the blood cholesterol after the prescription of a low cholesterol diet, we have frequently found that the diet has not been observed. Consequently we ask the patient at every visit whether the diet has been followed. The most satisfactory results both in reduction of the blood cholesterol and in relief of symptoms have been found when intelligence and cooperation with the physician have been evident.

An analysis of the 110 medical and surgical cases of hypercholesteremia in which treatment was with the low cholesterol diet indicates that this condition is far more prevalent in women than in men. In the medical group there were twenty-one males and eighty-one females and in the surgical group four males and forty females. The average age varied from 39 to 42 years.

Of the eighty medical patients with hypercholesteremia who were treated with the low cholesterol diet, sixty-five, or 81 per cent, showed an average reduction in blood cholesterol of 19 per cent. The average initial value for blood cholesterol was 262 mg. per hundred cubic centimeters, and the average final value, 211 mg., showing a reduction after treatment of 51 mg., or 19 per cent (fig. 1). In the control group of twenty-one patients having hypercholesteremia, who were not treated with the low cholesterol diet, half showed a reduction in blood cholesterol. The average reduction, however, was only 12 mg., or 5 per cent (fig. 1).

With regard to the clinical results of treatment in the eighty patients who received the low cholesterol diet, 29 per cent were symptom free, 51 per cent improved and 20 per cent unimproved. Of those who were unimproved, 5 per cent were found to have stones. In some cases operation had been refused; in others operation was subsequently performed. This leaves an unexplained 15 per cent in whom there was no symptomatic improvement. In the control series of twenty-one patients who did not receive the low cholesterol diet, only 14 per cent were symptom free,

19 per cent were improved and 67 per cent were unimproved. Of those unimproved, 23 per cent had stones, leaving a balance of 44 per cent for whose lack of improvement there was no apparent reason aside from the fact that they had had no dietary management.

The thirty surgical patients treated with the low cholesterol diet after operation were found to have an average initial value for blood cholesterol of 238 mg. per hundred cubic centimeters before cholecystectomy. Of these, twenty, or 67 per cent, showed an improvement in the level of the cholesterol, the average decrease being 58 mg., or 24 per cent (chart 2). A control series of fourteen patients with hypercholesteremia pre-operatively were not given the low cholesterol diet after operation. In this series 64 per cent showed a reduction in blood cholesterol after operation. The average decrease was 20 mg., or 9 per cent, approximately only a third of that in the series of patients on the low cholesterol diet.

Clinical observation of the thirty patients who were given the low cholesterol diet after operation showed 46 per cent symptom free, 33 per cent improved and 21 per cent unimproved. In the control series of fourteen patients who did not have the low cholesterol diet, 43 per cent were symptom free, 21 per cent improved and 36 per cent unimproved (chart 2). Since the clinical results in the two groups of surgical cases are somewhat inconclusive, a further study was made of the symptomatic response to the low cholesterol diet on the basis of reduction in blood cholesterol. Of the twenty patients showing a reduction in blood cholesterol, 45 per cent were symptom free, 45 per cent improved and 10 per cent unimproved. On the other hand, of the ten having no reduction in blood cholesterol only 60 per cent were improved, 40 per cent showing no clinical improvement (chart 3).

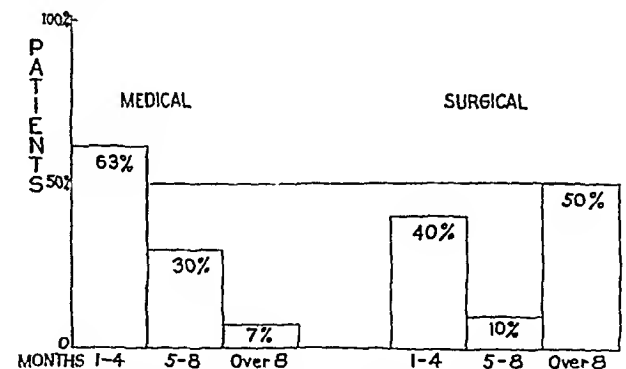


Fig. 4.—Intervals in which minimum values for blood cholesterol were obtained with a low cholesterol diet in medical and postoperative cases.

Another phase of this investigation was concerned with the interval from the institution of the low cholesterol diet until the minimum value for blood cholesterol was obtained. The maximum reduction in blood cholesterol occurred in 63 per cent of the medical cases during the first four months, in an additional 30 per cent in the next four months and in only 7 per cent after the eighth month. In contrast to this, in the surgical cases, in which the low cholesterol diet was started after cholecystectomy, the maximum reduction in blood cholesterol occurred in 40 per cent during the first four months, in 10 per cent during the next four months and in 50 per cent after the eighth month

(chart 4). Thus it is obvious that with regard to the hypercholesteremia the response to the low cholesterol diet is in most medical cases prompt, whereas after surgical intervention the response may be greatly delayed.

For further evidence of the importance of the low cholesterol diet after cholecystectomy we studied an additional series of twelve patients who had a normal value for blood cholesterol preoperatively but who had hypercholesteremia after operation. In this group the average preoperative value for blood cholesterol was 172 mg. per hundred cubic centimeters and the average maximum postoperative value 239 mg. The maximum increase in blood cholesterol occurred in half the cases within the first four months after operation; in most of the remainder, however, the maximum values were obtained after the eighth month. These observations seem to indicate the advisability of restricting the intake of fats and foods high in cholesterol for an indefinite period after cholecystectomy. The association of hypercholesteremia with symptoms following operation has previously been noted.

#### SUMMARY

1. A series of 110 medical and surgical patients with disease of the gallbladder and associated hypercholesteremia were treated with a low cholesterol diet. A control series of thirty-five patients did not receive this diet.

2. Of eighty medical patients 82 per cent showed an appreciable reduction in blood cholesterol; 80 per cent were symptomatically improved. Fifty per cent of the control group showed an inconsequential reduction of blood cholesterol; 33 per cent were symptomatically improved.

3. Sixty-seven per cent of the thirty surgical patients treated with the low cholesterol diet after cholecystectomy showed an average reduction in blood cholesterol of 24 per cent; 79 per cent were symptomatically improved. In the control group 65 per cent of the patients showed an average reduction in blood cholesterol of 5 per cent and 64 per cent showed symptomatic improvement.

4. Of the surgical patients who had symptoms after cholecystectomy and were treated with the low cholesterol diet, 10 per cent of those showing a reduction in blood cholesterol were unimproved. In the control group 40 per cent were unimproved.

5. Minimum readings of the blood cholesterol were obtained within the first eight months for 93 per cent of the medical patients on the low cholesterol diet, whereas after cholecystectomy minimum figures were obtained only after eight months for 50 per cent of the patients.

6. Twelve patients with gallbladder disease who had a normal value for blood cholesterol preoperatively had hypercholesteremia after cholecystectomy.

#### CONCLUSIONS

1. The low cholesterol diet has been found by repeated chemical analyses to reduce the blood cholesterol in cases of hypercholesteremia.

2. The low cholesterol diet gives symptomatic relief in most of these cases.

3. The diet is indicated also after cholecystectomy to preclude hypercholesteremia and recurrent symptoms.

65 East Fifty-Fifth Street—140 East Fifty-Fourth Street.

#### ABSTRACT OF DISCUSSION

DR. ARTHUR L. BLOOMFIELD, San Francisco: I find the paper of Dr. Twiss and Dr. Barnard interesting but difficult to discuss, because I am not entirely sure what kind of diseases they are talking about. That is true with many diseases or disorders pertaining to the biliary tract and to the gastrointestinal tract. If several physicians talk about auricular fibrillation they all know that they are dealing with exactly the same thing; but with the gallbladder, beyond biliary colic and obvious more or less acute infections, there is room for a difference of opinion as to diagnosis. It may be that some of the patients whom the authors have referred to would by others be regarded as having had some functional disorder. It is conceivable that a regimen of any sort plus psychotherapy might have led to relief of symptoms. I raise this possibility, which probably the authors will demolish, because it is difficult for me to see why reducing the cholesterol content, if that is what happens, should so promptly do away with the somewhat miscellaneous group of symptoms. I can see that if cholesterol in the bile could be reduced over a long period there might be less tendency for cholesterol to be deposited in the wall of the gallbladder or for gallstones to develop, but it is difficult for me to see why the patient should so promptly be improved. I seek to find some other explanation, and I should like to hear a more definite interpretation as to the mechanism whereby the patient is promptly relieved of his symptoms by this diet.

DR. JOHN RUSSELL TWISS, New York: In answer to Dr. Bloomfield's first question, as to why the patient shows such prompt relief of symptoms after being put on this diet, I made no statement to that effect. What I said was that the reduction in blood cholesterol occurred in 63 per cent of the patients within the first four months. I said nothing about the time required for the symptoms to disappear. However, I will say that the majority of the patients did show symptomatic relief within four months. Dr. Bloomfield would like to know on what basis we made our diagnosis. We make our diagnosis of gallbladder disease on the symptoms. The symptoms which we have found most commonly associated with such disease are those of "indigestion," by which we mean belching, distention, fear of eating, discomfort after meals, in some cases nausea and vomiting and in some cases colic and jaundice, the last-mentioned symptoms being relatively uncommon. Our second criterion for diagnosis is the appearance in roentgenograms. We made roentgenograms in every one of the cases reported. The indications of gallbladder disease were impaired visualization of the gallbladder, delayed emptying of the gallbladder, lack of visualization of the gallbladder or the presence of stones. Dr. Bloomfield would like to know why we said that the patients had gallbladder disease. In addition to the considerations previously mentioned, we had drained the biliary tract in every case. We had repeatedly examined the biliary sediment microscopically according to the method of Lyon. Furthermore, we had made bacteriologic examinations of the bile in a large proportion of cases, not only by drainage but at the time of operation. Our diagnostic criteria also included the chemical examination of the blood previously mentioned, especially the determination of the icterus index. We feel that the icterus index is a very important test, and we find that in a great many questionable cases a moderate elevation of the index, a reading between 8 and 15 (in the so-called zone of latent jaundice), is an important additional factor in making a diagnosis of disease of the gallbladder.

#### Number of Public Institutions for Feeble-minded.—

According to the latest available figures, there are now in the United States seventy-six public institutions for the feeble-minded (or for both the feeble-minded and the epileptic) with a total population of about 75,000. In addition there are some 113 private establishments with a combined enrolment of little more than 2,000. Altogether, these institutions accommodate less than one fifteenth of the estimated number of mental defectives in this country. Forty-four states have state institutions for the feeble-minded.—Deutsch, Albert: *The Mentally Ill in America*. New York, Doubleday, Doran & Co., Inc., 1937.

SULFANILAMIDE AND SERUM IN THE  
TREATMENT AND PROPHYLAXIS  
OF SCARLET FEVER

WALLACE SAKO, M.D.; P. F. DWAN, M.D.

AND

E. S. PLATOU, M.D.

MINNEAPOLIS

In 1935 Domagk<sup>1</sup> showed that prontosisil<sup>2</sup> had a marked protective and therapeutic value in experimental streptococcal infections in mice. This observation has been confirmed by numerous investigators. The drug also has a beneficial effect on similar infections in other animals and in man. Shortly after Domagk's discovery, Tréfouël and his co-workers<sup>3</sup> showed that prontosisil was broken down in the tissues to triaminobenzene and para-aminobenzene sulfonamide. The latter compound was believed by them to be the effective component of prontosisil. Recently numerous derivatives of the drug have been synthesized, but the estimation of the effectiveness of many of them requires further investigation.

The mode of action of sulfanilamide and its derivatives is still the subject of much conjecture. Since prontosisil has little or no bactericidal action in vitro, Domagk believed that enhancement of phagocytosis of the streptococci by the leukocytes explained its beneficial effect. Levaditi and Vaisman<sup>4</sup> "advanced the theory that this drug interfered with capsule formation, thus rendering the streptococci susceptible to phagocytosis." This view was later questioned by the experiments of Long and Bliss.<sup>5</sup> Harleiss<sup>6</sup> and Schranz<sup>7</sup> speculated that an activation of the reticulo-endothelial system was the important action of the drug. Long and Bliss stated that sulfanilamide was not bactericidal in vitro. They were unable to confirm Colebrook and Kenny's<sup>8</sup> claim that the serums of patients treated with sulfanilamide exerted a bactericidal effect on beta hemolytic streptococci in vitro. In experimental streptococcal and Welch bacillus infections they further concluded that bacteriostasis is the main effect produced by sulfanilamide therapy. On the basis of ingenious experiments with cultures taken from bone marrow, Osgood<sup>9</sup> concluded that neutralization of toxins by sulfanilamide played the major role and bacteriostasis was of secondary importance.

The favorable clinical results obtained with sulfanilamide in treating hemolytic streptococcus infections make it logical to assume that similar effects might be expected from the use of this drug in the treatment of scarlet fever. The only report in the literature which seems to indicate that it is of value is by Peters

and Havard,<sup>10</sup> who used para-benzyl-aminobenzene-sulfonamide (proseptasine) and found that the incidence of complications dropped appreciably after the administration of the drug to patients with scarlet fever.

We have attempted to compare a series of 100 scarlet fever patients treated with sulfanilamide during 1937-1938 with an equal number of controls who did not receive the drug. The two series, although not composed of alternate cases, ran concurrently and were comparable with respect to age, severity and duration of disease prior to treatment. Although the criteria for evaluating our results may be subject to criticism, some observations have been made which we believe are significant and seem to suggest that sulfanilamide is of value in the treatment of scarlet fever.

The drug was administered orally except to patients with nausea or extreme toxemia. The latter were given an initial large dose subcutaneously in the form of 1 per cent solution in physiologic solution of sodium chloride. The dosage used was that recommended by Long and Bliss<sup>11</sup> for severe infections: an initial massive dose of 0.05 Gm. per pound of body weight and a maintenance dose of 0.03 Gm. per pound in twenty-four hours. It is our impression that, per unit of weight, children tolerate the drug better than adults. With the exception of the development of leukopenia in two cases and a fever and rash in two additional cases in which we were compelled to discontinue therapy, no serious complications were encountered with the drug. Cyanosis without sulfhemoglobinemia was observed in several instances but therapy was continued without any ill effects. The dosage was gradually decreased but was continued on an average of twelve days. Too early discontinuance of the drug was believed to be the cause of the appearance of mild complications in a few of our cases. The best results were obtained when sulfanilamide was continued during the entire convalescent period. The fever curve in the treated cases, once it became normal, remained so in practically all cases without complications, whereas the untreated cases showed irregular rise in temperature, often without demonstrable explanation for this rise.

Tables 1 and 2 illustrate the most significant observations in our comparison between sulfanilamide treated and control cases. The incidence of complications was 41 per cent in the controls as compared to 8 per cent in the treated cases. As will be noted, there were nine suppurative conditions in the control cases as compared to one in the treated series.

In our treated cases the rate of recovery from the acute toxic phase of the disease (six days) was no more rapid than it was in the control cases (six days). The patients treated with sulfanilamide did not show the prompt subsidence of toxic symptoms such as we have observed following the administration of serum.

## SERUM THERAPY IN SCARLET FEVER

During the past decade an abundance of literature has accumulated concerning the beneficial influence of commercial antitoxin and human convalescent serum on toxemia, temperature, rash and complications of scarlet fever. Differences of opinion apparently still exist as to the degree and character of action of these serums.

1. Domagk, Gerhard: Chemotherapy for Streptococcal Infections, *Deutsche med. Wchnschr.* **61**: 250 (Feb. 15) 1935.

2. Prontosil is the disodium salt of 4-sulfamidophenyl-2'-azo-7'-acetyl-amino-1'-hydroxynaphthalene-3',6'-disulfonic acid.

3. Tréfouël, J.; Tréfouël, J. (Mme.); Nitti, F., and Bove, Daniel: The Activity of Para-Amino Phenylsulfonamide on Experimental Streptococcal Infections in Mice and Rabbits, *Compt. Rend. Soc. de biol.* **120**: 756, 1935.

4. Levaditi, Constantin, and Vaisman, A.: Curative Action of Prontosil and Several Similar Derivatives in Experimental Streptococcal Infection, *Compt. rend. Soc. de biol.* **119**: 946, 1935.

5. Bliss, Eleanor A., and Long, P. H.: Observations on the Mode of Action of Sulfanilamide, *J. A. M. A.* **109**: 1524-1527 (Nov. 6) 1937.

6. Harleiss, H.: Prontosil: Excerpt from Chemotherapy of Infectious Diseases, Caused by Protozoa and Bacteria, *Proc. of Royal Soc. of Med.* **29**: 313 (Feb.) 1936.

7. Schranz, H.: The Treatment of Sepsis with Prontosil, *München. med. Wchnschr.* **S2**: 419 (March 14) 1935.

8. Colebrook, Leonard, and Kenny, Mave: *Lancet* **1**: 1279 (June 6) 1936.

9. Osgood, E. E., and Brownlee, Inez E.: Culture of Human Bone Marrow: Mode of Action of Sulfanilamide, *J. A. M. A.* **110**: 349-356 (Jan. 29) 1938.

10. Peters, B. A., and Havard, R. V.: *Lancet* **1**: 1273-1274 (May 29) 1937.

11. Long, P. H., and Bliss, Eleanor A.: The Use of Para-Aminobenzenesulfonamide or Its Derivatives in the Treatment of Infections Due to Beta Hemolytic Streptococci, Pneumococci and Meningococci, *South. M. J.* **30**: 479-487 (May) 1937.



Some investigators contend that they are both purely antitoxic, whereas others believe that human convalescent serum has antibacterial properties as well.

Rhoads and Gasul<sup>12</sup> have shown by titration methods that twelve lots of pooled convalescent serum contained an average potency of only 500 neutralizing units of antitoxin per cubic centimeter as compared to 15,000 units per cubic centimeter in commercial antitoxin. It is obvious, therefore, that the antitoxic potency of

TABLE 1.—Complications in One Hundred Sulfanilamide Treated Cases of Scarlet Fever

Condition	Cases
Otitis media (nonsuppurative).....	4
Suppurative otitis media.....	1
Cervical adenitis (nonsuppurative).....	1
Nephritis .....	1
Sinusitis .....	1
Total .....	8

convalescent serum was found to be only one thirtieth that of the commercial product.

In spite of this relatively low antitoxic titer of convalescent serum, the clinical results reported by Thalhimer, Hoyne and Levinson<sup>13</sup> and others following therapeutic doses of 40 cc. compared favorably with those reported by one of us<sup>14</sup> at about the same time, commercial antitoxin being used in doses fifteen times as large when expressed in antitoxic neutralizing units.

The two groups of cases listed in table 4 contain about the same percentage of severe types and were observed at the same time in nearby midwestern cities, although they are not identical samples. The roughly similar reduction of principal complications in the two series as compared to controls suggests the possibility that factors other than antitoxic titer may explain the results obtained with human convalescent serum.

Although massive doses of convalescent serum are required to match the antitoxic titer of commercial antitoxin, it is believed by some that such quantities of human serum are clinically much more effective than an equivalent amount of commercial antitoxin. This is offered as further evidence that convalescent serum is to some extent antibacterial, or at least that its beneficial effect is not limited to its specific antitoxic content. Our own experience with massive doses of convalescent serum in critically ill patients suggests that this is true.

Observers consistently emphasize the importance of early administration of serum, some stressing the quantitative factor in therapy, but too few have dwelt on the need for a safe, rapid dissemination of antibodies which specifically combat the peculiarly widespread toxemia seen in scarlet fever. Human convalescent serum has a great advantage over horse serum with respect to safety when either is to be used intravenously, and this method of administration would certainly seem the logical one to follow in treating this disease.

If sulfanilamide eventually justifies the promise it now gives of being adequate in the average case of scarlet fever, it will perhaps be more than ever true that serum should be reserved as an adjunct for the severe cases in which its help is especially desired.

12. Rhoads, P. S., and Gasul, B. M.: Convalescent Scarlet Fever Serum and Commercial Antitoxin, *J. A. M. A.* 102:2005-2008 (June 16) 1934.

13. Hoyne, A. L.; Levinson, S. O., and Thalhimer, William: Convalescent Scarlet Fever Serum, *J. A. M. A.* 105:783 (Sept. 7) 1935.

14. Platou, E. S.: *Minnesota Med.* 15:697 (Oct.) 1932.

## PROPHYLAXIS

Essential factors determining the variability of scarlet fever are the virulence and dosage of the organisms and the resistance of the host. Epidemiologists believe that virulence is probably the least variable of these factors, and, since infectious dosage cannot be controlled, success in prophylaxis against scarlet fever must necessarily depend on one's ability to increase host resistance.

Experimental evidence suggests that small doses of convalescent serum may modify the permeability of cells and prevent the intimate parasitism usually exhibited in virus diseases. In bacterial disease, however, such a phenomenon is probably not operative, and in order to effect prophylaxis one must rely on increasing antitoxic or antibacterial properties of the blood.

It has been shown that scarlet fever convalescent serum and commercial antitoxin in large doses neutralize toxin and therefore are useful in the treatment of the disease. However, if scarlet fever convalescent serum contains quantitatively only small amounts of antibacterial substance, it follows that one must depend for prophylaxis principally on raising the antitoxic levels of the blood.

Does convalescent serum in 20 cc. dosage contain sufficient antitoxin to alter materially host resistance? If Rhoads and Gasul's titration values of 500 neutralizing units per cubic centimeter are correct, it would mean that in 20 cc. of serum only 10,000 neutralizing units is added in the attempted change of antitoxic status. These observers found that a large proportion of twenty Dick positive persons who had received from 10 to 20 cc. of convalescent serum had not become Dick negative several days later. If antitoxin alone is to be used as a criterion for immunity, it would seem from this evidence that susceptibility may not be as greatly modified by 20 cc. of serum as would be desired.

Will 20 cc. of convalescent serum prevent invasion of the body by the scarlet fever streptococcus? One

TABLE 2.—Complications in One Hundred Control Cases of Scarlet Fever

Condition	Cases
Otitis media (nonsuppurative).....	9
Suppurative otitis media.....	4
Cervical adenitis .....	6
Suppurative cervical adenitis.....	1
Otitis media and cervical adenitis.....	1
Mastoiditis .....	3
Mastoiditis and septicemia.....	1*
Nephritis .....	11
Arthritis .....	1
Sinusitis .....	1
Nephritis and sinusitis.....	1
Nephritis, suppurative otitis media, cervical adenitis.....	1
Arthritis and myocarditis.....	1
Total .....	41

\* Patient died.

of us (E. S. P.) witnessed failure to prevent such invasion in five of ten children (from 12 to 16 years of age), each of whom received 20 cc. of pooled scarlet fever convalescent serum. The five who did not contract the disease received additional chemotherapy with sulfanilamide.

One of a group of eleven English choir boys touring this country contracted scarlet fever while in Chicago. He was immediately removed to a municipal contagious hospital and the ten remaining boys were given

20 cc. each of pooled convalescent scarlet fever serum from the Samuel Deutsche Serum Center. The subsequent course of these cases seems interesting enough to warrant detailed description.

After seven days of isolation, the ten boys were permitted to proceed to Madison, Wis., where on the eighth day after receiving serum J. C. (patient 1) was sent to a hospital with scarlet fever. On arriving in Minneapolis ten days after administration of the serum,

TABLE 3.—Principal Complications in Cases Treated with Human Convalescent Serum as Compared to Controls

983 Treated Cases	6,282 Controls
9.5%.....Lymphadenitis .....	27.0%
8.8%.....Purulent otitis media.....	13.6%
0.2%.....Hemorrhagic nephritis .....	3.6%
18.5%.....Total .....	44.2%

G. P. (patient 2), was taken severely ill with angina, hyperpyrexia and prostration. Because cultures taken on material from the throat showed the presence of hemolytic streptococci, he was quarantined in the Minneapolis General Hospital. A very faint erythema appeared in the axillas at the end of forty-eight hours. During his stay in the hospital, otitis media, cervical adenitis, a mild nephritis and desquamation developed.

The day after the admission of patient 2 to the hospital (eleven days after serum administration), A. C. (patient 3), who gave a history of sore throat and fever three days after administration of serum, had a typical postscarlet tongue and slight desquamation and remained culture positive during three weeks of quarantine. This boy gave no history of previous scarlet fever and is now Dick negative. K. S. (patient 4) had a sore throat and fever the same day that patient 3 was isolated but recovered promptly without a rash or complications developing and was released under observation with two negative cultures at the end of one week.

J. S. (patient 5) was taken ill with a sore throat and had a positive culture the same day as patient 4, and although no rash developed his tongue gradually assumed a "strawberry" appearance, his temperature rose intermittently to 105 F. and nephritis, renal abscess, multiple arthritis and endocarditis developed.

The remaining five boys received sulfanilamide during the ten days of isolation, and negative cultures were obtained before release. They have remained well since.

Most observers who have reported on the prophylactic merits of convalescent serum contrast the incidence of the subsequent scarlet fever complex with the average morbidity among unprotected contacts. If convalescent serum modifies the complex to the extent of preventing a rash, may it not be that erroneous conclusions on the prophylactic merits of 20 cc. of serum may result? Can one be sure that fewer cases of invasion actually result, especially when there is no previous appraisal of host resistance? Certainly frank failures with serious complications make one wonder whether 20 cc. of serum will offer much help to those most in need; namely, those who receive large bacterial dosage or those who have particularly low resistance.

Prophylactic doses of commercial antitoxin have likewise been found lacking in adequate protection against bacterial invasion. During the past several years there

have been admitted to the Minneapolis General Hospital five patients with scarlet fever who have been known to have had such prophylaxis from two to twelve days previously. Two of these patients died, one from streptococcic laryngotracheobronchitis and the other from septicemia.

#### CHEMOPROPHYLAXIS

Most of the experimental evidence relative to the merits of sulfanilamide indicates that it has a very definite prophylactic effect. Domagk, who first demonstrated the value of prontosil, showed that it had a protective action on mice.

The finding of a throat culture positive for hemolytic streptococcus in a susceptible child exposed to the disease in a critical form prompted one of us (E. S. P.) to try sulfanilamide for protection, and the outcome was so favorable that we have used it cautiously in sixty intimate contacts to date with no failures. This number of cases is obviously too small from which to draw any conclusions. The drug cannot be recommended for routine prophylactic use until its mode of action, optimal dosage and allergic or toxic effects are more clearly understood. It is hoped that the future may possibly offer something worth while in the use of this drug perhaps as a synergistic agent complementing the action of serum.

#### SUMMARY

Among 100 cases of scarlet fever treated in which large doses of sulfanilamide were given complications developed in eight whereas among 100 similar cases in which the drug was not given complications occurred in forty-one.

The rate of recovery from the acute toxic phase of the disease among the sulfanilamide treated as compared to the control cases could not be said to be accelerated.

Scarlet fever toxemia has been shown to be strikingly modified by early massive doses of antitoxin contained in human convalescent serum and commercial horse serum.

Although human convalescent serum has a lower antitoxic titer per cubic centimeter than commercial antitoxin, the former has a distinct advantage with respect to safety for intravenous use.

TABLE 4.—Principal Complications in Cases Treated with Commercial Antitoxin as Compared to Controls

1,664 Treated Cases	2,000 Controls
3.9%.....Lymphadenitis .....	11.7%
5.9%.....Purulent otitis media.....	12.7%
0.8%.....Hemorrhagic nephritis .....	3.8%
10.6%.....Total .....	28.2%

Twenty cc. of pooled human convalescent serum failed to prevent the streptococcic invasion of scarlet fever in five of ten boys who were intimately exposed to it, whereas the five who received additional chemoprophylaxis did not contract the disease.

Commercial antitoxin in our experience has failed to protect several persons against the streptococcic invasion of scarlet fever.

Early massive intravenous serum therapy to combat toxemia combined with continued large doses of sulfanilamide seems to be the most efficacious treatment for scarlet fever.

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## MEDIASTINAL INFECTION FROM ESOPHAGEAL PERFORATION

CHARLES E. PHILLIPS, M.D.

LOS ANGELES

Mediastinitis due to perforation of the esophagus has been generally considered a fatal condition.

Quotations from three representative authorities will suffice to show the expected outcome of this accident: "Rupture or perforation of the esophagus results in a mediastinal infection, which is fatal" (Broyles<sup>1</sup>). "If, in consequence of such injury, the mediastinum or the pleura is opened, death from infection is almost certain to occur" (Torek<sup>2</sup>). "The occurrence of a perforation of the esophagus is in the vast majority of cases associated with fatal consequences" (Graham, Singer and Ballon<sup>3</sup>).

Unfortunately these statements are true, but needlessly so. The work of Chevalier Jackson, Chevalier L.

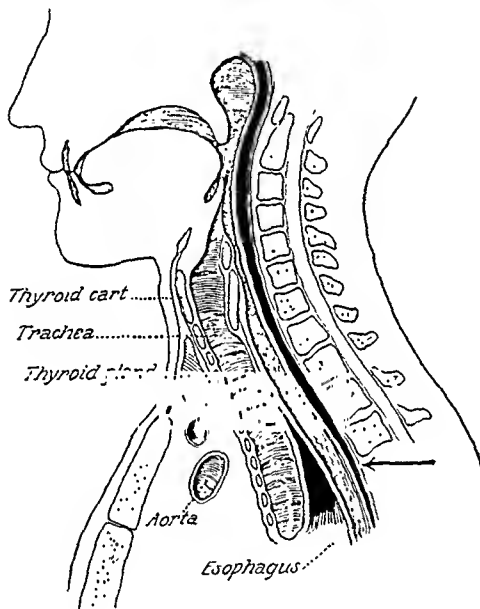


Fig. 1.—Sagittal section of the cervical and superior mediastinal spaces with narrowing of the retrovisceral space between the superior and posterior mediastinal spaces.

Jackson, William Lerche,<sup>4</sup> Herman Pearse Jr.<sup>5</sup> and a few others shows that a great majority of patients can be saved by surgical intervention.

I desire to present my own series of twenty cases of mediastinal infection from esophageal perforation. There were in this series three deaths, all of which under different circumstances might have been prevented.

The anatomy with which this condition is particularly concerned consists of a space surrounding the

esophagus and extending in continuity from the retropharyngeal space to the diaphragm. This space is filled with loose areolar tissue and shows two points of constriction. The first point is at the superior aperture of the thorax, where the parietal pleura is attached to the first rib. The second point of constriction is at the junction of the superior with the posterior mediastinal spaces, where the roots of the lung, bifurcation of the trachea and great vessels seem to form a partial barrier to the passage of infection. In only three of the twenty cases analyzed did infection travel from the superior to the posterior mediastinum, although infection readily passed from the retropharyngeal space to the superior mediastinum in a majority of the cases.

The periesophageal or mediastinal spaces are in constant motion from the surrounding pulsating vessels and moving pleura, rendering the presence of infection especially hazardous.

The wall of the esophagus is composed of mucous, submucous and muscular coats. The vulnerability of the esophagus to blunt force or to perforation by sharp objects is striking. After perforation has occurred, the constant motion of the mediastinal structures predisposes to a rapid dissemination of infection.

Perforations of the esophagus occur for the most part in its upper portion; first, because this is the most constricted section and the most exposed to traumatism; secondly, because ingested material changes its course as it enters the esophagus from the pharynx, and, finally, because the pharyngeal muscles compress the food from a globular to an elongated mass and push it from the pharynx into the esophagus, so that foreign bodies of dangerous dimensions mixed with the food are caused to protrude and perforate the esophagus. Once infection is liberated in the periesophageal spaces of the neck, the line of spread depends on the amount and virulence of the infective material.

When the infective material is relatively small it may remain localized in the neck for some time and then gradually descend into the superior mediastinum and along the great vessels in the base of the neck. This course of extension explains the lateral swelling of the base of the neck. The infection penetrated into the superior mediastinum in every case in which there was found a lateral swelling in the neck.

The diagnosis of mediastinal infection from esophageal perforation must be made promptly, and the abscess accurately localized to assure success in treatment. The diagnosis is made on the following points:

1. There is a history of injury following the ingestion of some sharp substance or of perforation during instrumentation.
2. Immediate symptoms of pain, tenderness and dysphagia are followed by fever, swelling and subcutaneous emphysema.
3. X-ray examination may show a foreign body, emphysema or irregularities of the tissues after the ingestion of an opaque meal.
4. Endoscopic examination may show gross perforations and suggestive irregularities or perforating foreign bodies.

It is only by the selective application of any or all of these measures that an early diagnosis can be attained.

The mechanism of infection is varied: (a) It may slowly perforate an injured mucosa and later reach the mediastinum. (b) A virulent infection with a minimum of trauma may set up active mediastinitis.

Read before the Section on Surgery, General and Abdominal, at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 17, 1938.

Dr. Simon Jesberg referred a majority of the patients and did the endoscopic work in localizing the lesions. Dr. Alden H. Miller assisted in assembling the records.

1. Broyles, E. N.: *Oesophagus*, in Lewis, Dean: *Practice of Surgery*, London, John Murray, 1930, vol. 4, chapter 8, p. 11.

2. Torek, Franz: *Wounds of the Esophagus*, in Nelson Loose-Leaf Living Surgery, New York, Thomas Nelson & Sons, 1927, vol. 4, chap. 3, p. 127.

3. Graham, E. A.; Singer, J. J., and Ballon, H. C.: *Surgical Diseases of the Chest*, Philadelphia, Lea & Febiger, 1935.

4. Lerche, William: *Mediastinal Infections*, in Lewis, Dean: *Practice of Surgery*, London, John Murray, 1930, vol. 4, chapter 12; *Suppurations in the Posterior Mediastinum*, *Arch. Surg.* 8: 247 (Jan.) 1924.

5. Pearse, Herman E., Jr.: *The Operation for Perforation of the Cervical Esophagus*, *Surg. Gynec. & Obst.* 56: 192 (Feb.) 1933.

(c) A minute perforation may remain walled off from the mediastinum until the opening into the esophagus closes and then a fulminating mediastinitis result. (d) A wide opening in the mediastinum leads to rapidly spreading emphysema and mediastinitis.

Accidents and complications due to unforeseen conditions arose in several cases of this series. The penetration of infection into the great blood vessels, resulting in septicemia, constituted the chief threat to

normal expansion and contraction of the esophagus in swallowing represents the amount of available space that can be utilized with safety in entering the mediastinum. The space will not always admit the finger without possible injury to the pleura, but it will accommodate about three Dakin tubes on each side of the esophagus without undue pressure on the pleura. The Dakin tubes, with lateral openings, are inserted into the superior mediastinum. It is essential that the tubes be kept free and open, so that they may function as drainage as well as irrigation tubes. The motion of the mediastinal structures forces out the solution soon after it is injected and disinfection of the mediastinum is effected. The irrigation should be done every two hours until the infection subsides. Thereafter it is repeated twice daily as the tubes are gradually removed. By a gradual shortening of the tubes, the mediastinal cavity is made to close from the bottom. The average acute mediastinitis clears up within ten days or two weeks and is healed completely in another week.

When the infection is in the posterior mediastinum the surgical attack should be made from the dorsum. After localization of the perforation, the resection of 2 inches of the posterior end of two ribs below the point of perforation and displacement of the pleura outward will afford access to the posterior mediastinum. It is to be well noted that the thoracic duct is exposed to injury when the left side is opened.

When the barium sulfate used for the visualization of the perforation is encountered, the Dakin tubes are placed and the wound closed to the tubes. In all cases of mediastinitis a feeding tube is passed through the nose and down the esophagus. It is left in situ until the esophagus is healed. Usually it can be discarded at the end of ten days, provided no further leakage takes place through the perforation.

#### CONCLUSIONS

When the perforation is recognized immediately and proper treatment instituted without delay, recovery is reasonably assured.

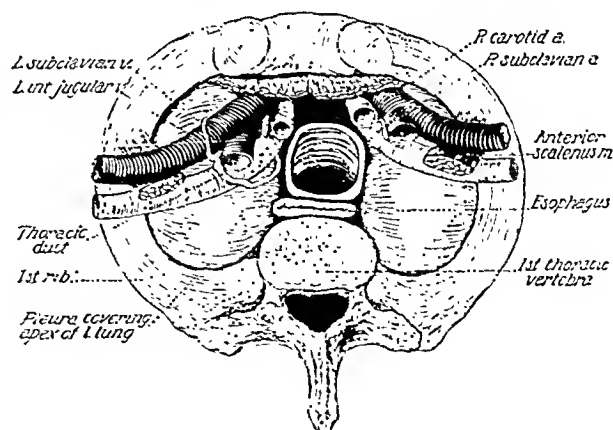


Fig. 3.—The superior aperture of the thorax, showing the relations of the pleura and esophagus.

Septic mediastinitis from perforation of the esophagus is a curable condition. The essentials of success are early diagnosis, the services of a skilful endoscopist and radiologist and a surgeon with the ability to use regional anesthesia and diluted solution of sodium hypochlorite. In this series early operation would have saved at least two of the three patients who died.

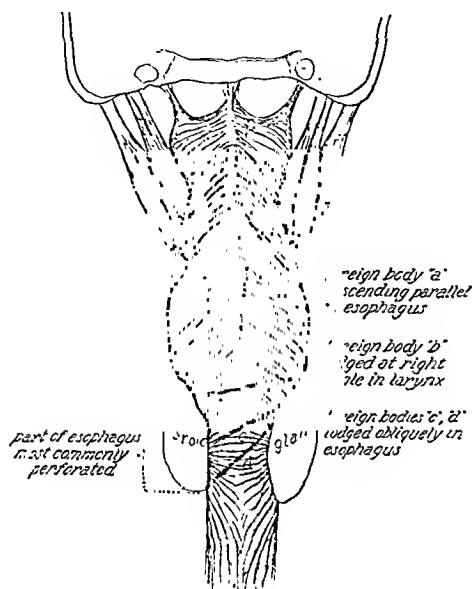


Fig. 2.—Retropharyngo-esophageal surfaces, showing four hypothetical foreign bodies: "a" will be swallowed safely; "b" will lodge and probably be regurgitated without damage and "c" and "d" may lead to perforation with attempts to force them down the gullet.

life. None of the patients treated within the first twenty-four hours after perforation succumbed to infection. Serious secondary hemorrhage occurred in two cases, 7 and 17. One patient recovered and the other died. Patient 7 suffered a slough of his internal jugular vein from the pressure of the Dakin tubes but recovered. Patient 17 sloughed a section of her esophagus and promptly died of hemorrhage. In case 9 the thoracic duct was injured but recovery ensued. The second death, in case 11, resulted from a double pneumothorax. The third death, in case 20, was a result of infection. The patient refused operation until two days had elapsed after perforation, and he died of spreading infection.

Surgical treatment has for its objectives:

1. Localization of the lesion.
2. Surgical approach and evacuation of the abscess.
3. Release of pressure.
4. Sterilization of the abscess cavity by diluted solution of sodium hypochlorite.
5. Continued disinfection until healing is complete.

Infection in the retropharyngeal and superior mediastinal spaces is treated by a surgical approach through an incision along the anterior border of the sternocleidomastoid muscle. The muscles are separated, and the lower pole of the thyroid is elevated. This affords an easy access to the periesophageal and the superior mediastinal spaces.

It is important that the parietal pleura be uninjured in the approach to the superior mediastinum. Perforation of the pleura usually leads to disaster. The

## REPORT OF CASES

CASE 1.—Mrs. C. H. F., white, aged 40, who was admitted to the Methodist Hospital Aug. 20, 1919, complaining of pain in the throat, inability to swallow, swelling of the right supraclavicular region and symptoms of sepsis, said that four days previously, while she was eating chicken, a piece of rib had stuck in her throat. There were increasing pain and fever, and for the preceding twenty-four hours she had noticed swelling



Fig. 4.—Lower boundary of the superior mediastinum, where a descending infection is usually arrested.

of the right supraclavicular region. She called Dr. Simon Jesberg, who located a bone which was perforating the esophagus 3 inches below the hyoid bone. He removed it through the endoscope and referred the patient for surgical drainage. With the patient under general anesthesia the neck was opened through an incision along the anterior border of the right sternocleidomastoid muscle. The mediastinum was entered under the right lobe of the thyroid. An abscess was found surrounding the esophagus and extending into the superior mediastinum. Dakin tubes were inserted and irrigations carried out every two hours. The patient recovered in nine days.

CASE 2.—H. E. B., a white man aged 27, admitted to the Methodist Hospital May 22, 1923, had swallowed a fish bone a week previously. The throat was quite sore and then improved for two days, after which there was a marked increase of symptoms, with inability to swallow, fever, and tenderness of the neck. The patient consulted Dr. Jesberg, who made a careful endoscopic examination, with negative results, and referred him for surgical treatment. Cervical block anesthesia on the left side was used, and the neck was opened through an incision along the anterior border of the left sternocleidomastoid muscle. A mediastinal abscess was found and evacuated, and Dakin tubes were inserted. The postoperative course was uneventful, and the patient was discharged as cured June 13.

CASE 3.—Mrs. J. J. H., white, aged 53, admitted to the Methodist Hospital June 7, 1926, had had a bone catch in her throat about six months previously. The bone was removed, but the throat remained sore and gradually became worse. There was great difficulty in swallowing. She suffered a loss in weight of 30 pounds (13.6 Kg.). She consulted Dr. Jesberg, who made an endoscopic examination, finding an inflammatory mass obstructing the esophagus and also a tracheo-esophageal fistula. He was unable to pass the endoscope. Barium sulfate was given, and x-ray examination by Dr. W. B. Bowman showed almost total occlusion of the esophagus. The barium mixture flowed into the trachea. A preliminary gastrostomy was done with local anesthesia, and then, with the patient under general anesthesia, an incision was made along the anterior border of the left sternocleidomastoid muscle. A large abscess was found in the superior mediastinum, communicating with

the tracheo-esophageal fistula. Dakin and drainage tubes were inserted. The patient was fed through the gastrostomy opening, and Dakin's treatment was instituted, care being used on account of the tracheal fistula. The patient made a complete recovery.

CASE 4.—Mrs. L. A., white, aged 59, was admitted to the Hollywood Hospital July 29, 1928. About six weeks previously a bone had lodged in her throat and she had gone to the Ear and Eye Hospital, where Dr. Jesberg removed it through an endoscope. She was greatly improved and went home after a few days. The throat remained sore, and a few days before her admission to the Hollywood Hospital there was a sudden exacerbation of pain associated with fever, hoarseness, dysphagia and respiratory embarrassment and swelling in the left supraclavicular region. The urgency of the symptoms necessitated immediate operation. Cervical block anesthesia on the left side was used, and the superior mediastinum was opened through a left-sided collar incision. A large abscess was found extending from the neck into the superior mediastinum. Dakin tubes were inserted, and cultures were taken. These showed gram-negative bacilli and cocci. On August 6 a large slough came out, and healing followed.

CASE 5.—H. B. R., a white man aged 36, was admitted to the Eye and Ear Hospital May 12, 1932, with a history of having swallowed a chicken bone that day. Immediate endoscopic examination by Dr. Jesberg failed to show the bone. On the following day there was marked swelling of the neck and a temperature of 101 F. On May 14 operation was performed. Under regional anesthesia both sides of the neck were opened along the anterior border of the sternocleidomastoid muscle. A large rent was found in the posterior wall of the esophagus. The chicken bone was found in the prevertebral space, and the infection had penetrated into the mediastinum. Dakin tubes were inserted, and irrigations were given every two hours. The temperature remained up for six days and then subsided. The Dakin tubes were removed at the end of a week and the patient was discharged as cured after nine days.

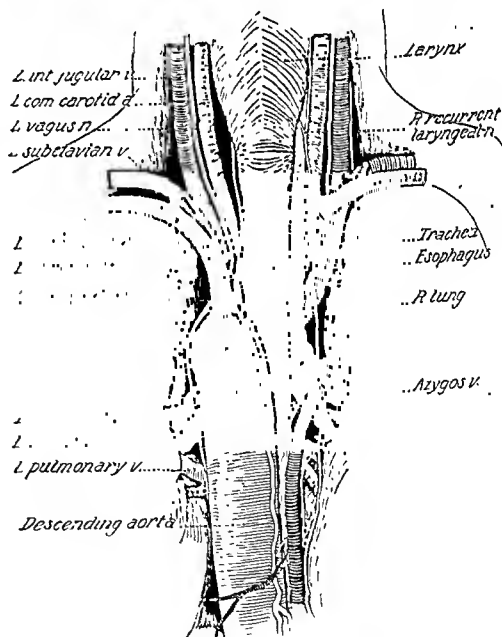


Fig. 5.—The relations of the esophagus and mediastinal structures.

CASE 6.—M. G., an elderly, white, insane woman, while in an asylum, on March 18, 1928, broke her false teeth and attempted to swallow them. She was transferred to the Eye and Ear Hospital, where an endoscopic examination was attempted by Dr. Jesberg, but so much respiratory embarrassment resulted that the attempt was discontinued. The patient's condition remained precarious until March 30, when a mediastinotomy on the left side was performed. Much pus and barium sulfate were found. Drains and Dakin tubes were inserted, and no further exploration was attempted. On April 5 an exacerbation



of symptoms, with the temperature up to 102 F., necessitated further exploration. A foreign body was found surrounded by much necrotic material. The Dakin tubes were replaced and irrigations were resumed. The physical recovery was uneventful.

CASE 7.—A white man aged 35, on July 11, 1933, while eating had a bone stick in his throat. He entered the Eye and Ear Hospital, where Dr. Jesberg removed the bone through an

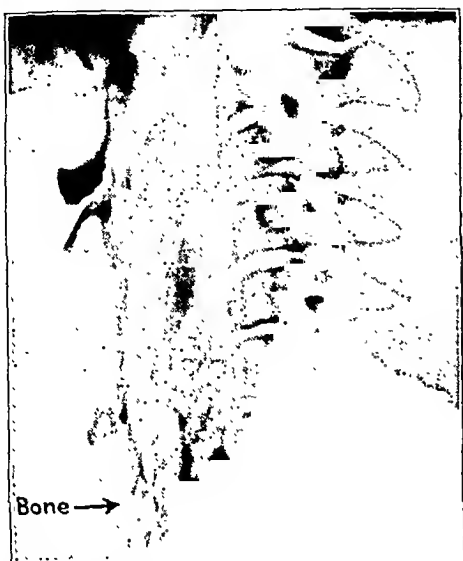


Fig. 6 (case 7).—Emphysema of the neck and a bone, indicated by arrow, in the esophagus.

endoscope. By the next morning there was such emphysema of the tissues of the neck and face that the eyes could not be opened and a usually prominent nose was represented as a dimple in the swollen face. Barium sulfate and roentgenograms showed the barium preparation in the mediastinum and the tissues filled with air (figs. 6 and 7). Under block anesthesia the mediastinum was opened through an incision along the anterior border of the right sternocleidomastoid muscle. There was so much distortion of the tissues by the emphysema that the mediastinum was opened inadvertently from the outer rather than from the mesial side of the carotid sheath. When the air escaped from the tissues, it was found that the internal jugular vein was exposed along the mesial side of the incision and was in contact with the Dakin tubes placed in the mediastinum. Dakin's treatment was carried out every two hours. On the second night the pressure of the tubes caused a rupture of the internal jugular vein. The patient coughed and lost a half pint of blood from the incision in the neck. The nurse found that pressure on the neck controlled the hemorrhage. An emergency operation with regional anesthesia was done, the internal jugular was tied and the tubes were placed through an incision made on the mesial side of the vessels on the opposite side of the neck. A transfusion of blood was necessary. The patient had a stormy convalescence but recovered within two months.

CASE 8.—R. W., a white man aged 41, swallowed a chicken bone July 4, 1934. The bone was removed through the endoscope by Dr. Jesberg July 6. Symptoms improved until July 11, when there was an increase of pain and the neck began to swell. The temperature went to 101 F. An x-ray examination July 17 showed a widening of the prevertebral space. July 19 the neck was opened and an abscess was found extending into the superior mediastinum. Dakin's treatment was instituted. The convalescence was uneventful and the patient was discharged as cured Aug. 28, 1934.

CASE 9.—F. E., a white youth aged 17, swallowed lye in infancy. He had been under treatment in the Jesberg clinic for many years, reporting at intervals for dilation of a stricture of the esophagus. Aug. 8, 1934, during an attempt to pass the dilator, the esophagus was perforated into the posterior medi-

astinum, just below the roots of the lungs. A roentgenogram made after the administration of barium sulfate showed the defect (fig. 8). Immediate operation was performed. With the patient under general anesthesia 2 inches of the posterior ends of the left ninth and tenth ribs were resected. The pleura was displaced outward and the mediastinum was entered. The perforation was identified by the extravasated barium preparation. Drains and Dakin tubes were inserted. The next morning the wound was filled with chyle, showing an injury to the thoracic duct. This leakage stopped after twenty-four hours. A few days later it was found that the infection had penetrated between the upper and lower lobes of the left lung. A localized empyema was drained in the axillary line. The patient made an uninterrupted recovery.

CASE 10.—M. C., aged 1 year, the only patient to recover without operation, swallowed some ornaments from a Christmas tree Dec. 25, 1934. He began to expectorate bloody mucus and to cry when swallowing. Esophagoscopy the following day showed esophageal lacerations, with a piece of glass in one. December 27 the temperature was 104 F. and x-ray examination showed the chest clear; the results of esophagoscopy examination were negative. January 8 a second roentgenogram with barium sulfate showed an abscess at the level of the second rib and another at the level of the eighth rib. The former abscess extended upward for 2 inches and communicated with the esophagus at both ends. Much pus was ejected from the nose and mouth, the temperature was 104 F. for two weeks, and then recovery took place without intervention. This case seems to show that the superior and posterior spaces have a free communication in childhood. It also shows that an occasional patient may recover without surgical intervention.

CASE 11.—A. W., a white woman aged 38, on March 30, 1935, swallowed a loose denture, which lodged in the throat. At endoscopic examination Dr. Jesberg saw the denture penetrating the esophagus and extending into the superior mediastinum



Fig. 7 (case 7).—Barium sulfate in the superior mediastinum.

at the level of the second rib. He was unable to remove or cut it. The patient, with rapidly spreading emphysema, was transferred to the Los Angeles County Hospital, where she was operated on, the following day. The mediastinum was opened through the anterior border of the right sternocleidomastoid muscle. The denture was located between the esophagus and the trachea at the level of the third dorsal vertebra. Removal was accomplished after disarticulation of the inner

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32694 JAMES 32694

end of the clavicle. The clavicle was replaced, and Dakin tubes were inserted and irrigations started. The patient died on the following day from double pneumothorax. Death might have been prevented by a timely aspiration of the air from the pleural cavities.

CASE 12.—D. G. Mc., a white man aged 46, admitted to the Los Angeles County Hospital Aug. 7, 1935, had a history of a slight injury to the esophagus followed by cough, fever and



Fig. 8 (case 9).—A stricture of the esophagus due to lye; rupture into the posterior mediastinum.

dysphagia. On August 14 examination seemed to show a mediastinal infection. Under regional anesthesia the left side of the neck was opened and an abscess was found extending down into the mediastinum. Dakin tubes were inserted and irrigations carried out until apparent cure had been effected. Jan. 8, 1936, the symptoms recurred. A roentgenogram taken after an injection into the esophagus of iodized poppyseed oil showed the oil passing into the mediastinum at the tenth dorsal vertebra. There was considerable pulmonary involvement in both lower lobes. Before the study was completed there was a rupture of an abscess into a bronchus (fig. 9). The patient then made a good recovery. Haste in removing the tubes after the first operation resulted in a residual abscess, which gravitated into the posterior mediastinum and then ruptured into a bronchus.

CASE 13.—I. D., a white man aged 35, on Aug. 28, 1935, suffered an abscess of his left second molar. An incision and drainage were followed by swelling of the left side of the neck. September 12 a second operation showed an abscess in the left side of the neck, extending along the carotid sheath and down into the superior mediastinum. Five Dakin tubes were inserted into the abscess cavity and irrigations carried out. Rapid healing took place and an apparent cure within two weeks. Within six weeks the patient suffered a relapse and had a septic temperature, which went to 103 F., with pain and cough. The incision in the neck was reopened, and an abscess was found in the anterior mediastinum, extending down behind the sternum. The infection spread and resulted in osteomyelitis of the sternum. Another operation, December 12, with removal of the necrotic portion of the sternum and with multiple openings left resulted in a cure by March 1936.

CASE 14.—M. D., a white woman aged 32, admitted to the Eye and Ear Hospital Jan. 11, 1936, had a history of a streptococcal sore throat for five days, a temperature of 105 F. and a leukocyte count of 18,000. There was marked swelling of the left hypopharynx, as well as swelling of the left supraclavicular region. Dr. Jesberg opened the neck through the

direct laryngoscope, and later the mediastinum was opened through an approach in front of the left sternocleidomastoid muscle. Dakin tubes were inserted and irrigations carried out. Prompt recovery resulted.

CASE 15.—M. C., a white woman aged 50, admitted to the Los Angeles County Hospital Feb. 13, 1936, suffering from retropharyngeal abscess, was very toxic, had a temperature of 104.8 F., a rapid pulse, dysphagia, cough and profuse expectoration. The abscess was opened through the pharynx by Dr. Goodsel. So much pus came out that he injected the abscess with iodized poppyseed oil and later had a roentgenogram made (fig. 10), which showed the oil passing down the left retropharyngeal space into the mediastinum. It then passed over to the right side, where it entered the bronchus of the upper lobe of the right lung. March 13, 1936, under field block anesthesia, the right side of the mediastinum was opened through an incision along the anterior border of the right sternocleidomastoid muscle. The abscess was encountered at the level of the second dorsal vertebra. Dakin tubes were inserted and instillations were started, great care being used because of the bronchial fistula. Within a few days the bronchial fistula closed and the irrigations were carried out more efficiently. The temperature became normal within eight days. The patient was discharged as cured nine days after operation.

CASE 16.—M. R., a white woman aged 60, swallowed a chicken bone March 4, 1935. She suffered pain, fever and dysphagia, which gradually increased until March 10, when she was admitted to the Los Angeles County Hospital. Roentgenograms showed the bone posterior to the esophagus at the level of the sixth cervical vertebra. Her symptoms became so urgent that an emergency tracheotomy was performed by Dr. Goodsel. On the following day, under regional anesthesia, the left side of the neck was opened and an abscess was found extending down into the superior mediastinum. Dakin tubes were inserted and irrigations were carried out regularly. The patient recovered in thirty days.

CASE 17.—A. Mc. G., a white woman aged 22, swallowed a partial denture Sept. 22, 1936. It consisted of several teeth attached to a brace. She was treated in a quack hospital, where irreparable damage was done before the attempt at removal was abandoned; she was then transferred to the Los Angeles County Hospital. On her admission, September 23, the temperature was 102 F., the pulse rate 100 and the respiratory rate 24. Immediately, under regional anesthesia, the superior mediastinum



Fig. 9 (case 12).—Barium sulfate passing into the posterior mediastinum and rupturing into the bronchus.

was opened, and it was found filled with foul pus. Dakin tubes were inserted and the wound partially closed. Irrigations were carried out every two hours. Improvement took place, and the patient was apparently on the road to recovery. On the eighth postoperative day there was a sudden hemorrhage and she died. Autopsy showed that the esophagus and trachea had been terribly lacerated by the attempts to remove the denture and that sloughing of the esophagus had taken place, with fatal hemorrhage.

CASE 18.—M. O., a white woman aged 52, on June 26, 1937, while eating toast with jam, felt pain in the throat and found that the throat was bleeding. Pain in the neck and emphysema rapidly developed. She entered the Eye and Ear Hospital within a few hours. An endoscopic examination showed lacerations of the upper part of the esophagus, mostly on the right side. An anteroposterior roentgenogram showed nothing, but a lateral view showed a curved piece of glass, evidently a chip

done, but Dakin tubes were inserted and irrigations were started. The patient died of septicemia two days later. His death was attributed to refusal of early operation.

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### ABSTRACT OF DISCUSSION

DR. SIMON JESBERG, Los Angeles: To the uninitiated, it would seem that to pass an esophagoscope is a simple matter. From all the endoscopic experience at the Eye and Ear Hospital there is no case on record in which the respiratory tract was ruptured by instrumentation. Dr. Phillips has reported twenty of our cases in which he operated. We have many more in which for some reason operation was not performed. The esophagus is a very weak viscus. Its walls are thin and it is highly intolerant of insult. From this report one would think that an endoscopist never does anything but poke holes in the esophagus. This series, however, is the concentration of well over 5,000 cases of esophagoscopy. In the case of the esophageal rupture Dr. Phillips is a little optimistic and willing to give the endoscopist a break. As a matter of fact, few foreign bodies will rupture the esophagus spontaneously. It is only when instrumentation is performed that rupture occurs. Blind instrumentation, such as the passing of a stomach tube with the idea of passing the foreign body on into the stomach, is absolutely to be condemned. I have seen several cases in which a comparatively harmless foreign body was pushed clear through the esophagus into the mediastinum. Rupture is one of the hazards of instrumentation in the removal of foreign bodies, and from a medicolegal standpoint there should be a definite understanding when passing of the esophagoscope is begun. The patient must understand that the procedure is not a simple little thing, like picking a splinter from a finger. That is often the patient's conception; because he got the foreign body so easily he expects it to come out easily. Unless there is some understanding with the patient, few endoscopists care to take the risk involved. They know, however, that they can still offer the patient a fair chance to recover should this



Fig. 10 (case 15).—Mediastinal abscess rupturing into the bronchus; injection of iodized poppyseed oil.

off the Jani jar, lying in the prevertebral space (fig. 11). On the anteroposterior view, the glass was superimposed on the vertebra and was not visible. As the amount of tenderness was more on the left side, it was elected to explore that side. Under regional anesthesia the neck was opened on the left side and the piece of glass was found. The point of greatest tenderness was an accurate guide to the location of the glass. Dakin tubes were inserted and the irrigations were repeated every two hours. The patient made a rapid recovery and was able to leave the hospital within ten days.

CASE 19.—R. N., a white woman aged 69, was admitted to the Los Angeles County Hospital Aug. 31, 1937, for esophagoscopy examination. On the day following the instrumentation there were swelling of the left side of the neck, dysphagia and pain in the chest and in the interseapular region. The examination was repeated and an abscess was seen in the esophageal wall. This was opened through the endoscope and a large amount of pus was evacuated. The abscess recurred, the neck became swollen and the patient became dyspneic and cyanotic. On September 10 the neck was opened along the anterior border of the left sternocleidomastoid muscle and a large abscess was found extending into the mediastinum. Dakin tubes and drains were inserted and irrigations were carried out. The patient needed oxygen for the first twelve hours and then went on to recovery. Complete healing occurred in six weeks.

CASE 20.—S. R., a white man aged 37, on Jan. 14, 1937, was treated in the clinic for cardiospasm. Difficulty was encountered in passing the dilator. The patient went home after the instrumentation, complaining of pain, soreness and dysphagia. He was admitted to the Cedars of Lebanon Hospital when swelling, emphysema and fever were found. An x-ray examination, following the taking of a barium mixture, revealed a defect in the posterior wall of the cervical part of the esophagus. An operation was advised and refused. Two days later, with increasing sepsis, he consented to operation. Under regional anesthesia the left side of the neck was opened along the anterior border of the sternocleidomastoid muscle and an abscess was encountered. No further exploration was



Fig. 11 (case 18).—A piece of glass, indicated by arrow, perforating the esophagus and emphysema in the prevertebral space.

catastrophe occur. An impacted foreign body such as a bone in the esophagus may defy removal without rupture, or it may cause a rupture and the physician not know it. Of course it is easy to tear the esophagus without a foreign body being present, by forcing the tube when the position is not proper. How does the endoscopist know that he has ruptured the esophagus? If the rupture is of any size, an immediate emphysema will show in the neck. When such an emphysema occurs he can be almost certain that he has ruptured the esophagus.

The patient must be watched carefully. Not all require opening of the mediastinum. However, as soon as it is obvious that there is a leak through into the mediastinum, drainage should be instituted; one should not wait for actual sepsis in the mediastinum. In connection with the child who swallowed fragments of glass Christmas tree ornaments, this child did not recover spontaneously; he recovered because, in the search for small glass fragments in the esophagus, the mediastinal abscess was inadvertently ruptured into the esophagus and drainage thereby provided.

DR. CHARLES E. PHILLIPS, Los Angeles: This subject should be taken seriously, and patients should be given a real chance for recovery. Infection in the mediastinum is not a fatal condition unless it is allowed to remain untreated.

### TRUE AURICULAR FIBRILLATION COMPARED WITH MUSCLE TREMORS OF POLIOMYELITIS

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Somatic muscle tremors are of an intrinsic origin and will complicate auricular fibrillation. Lewis stated that "when a somatic muscle tremor is coarse, the curves present difficulties with doubt as to whether a given series of oscillations are of somatic or cardiac origin." Two cases illustrating comparative analyses are presented to show the apparent similar electrocardiographic tracings in two divergent clinical manifestations such as (1) auricular fibrillation and (2) poliomyelitis with subjective somatic tremors simulating auricular fibrillation. Brief introductory remarks will be made regarding auricular fibrillation and complicating artefacts intrinsically.

The absolute factor or factors are many in auricular fibrillation without any specificity. That the condition arises paroxysmally or permanently is conclusively shown by the predominance of literature on the subject and by the experiences of all physicians in every medical field. Lewis,<sup>1</sup> Luten and Jeffreys,<sup>2</sup> Brill,<sup>3</sup> Friedlander and Levine,<sup>4</sup> Smith,<sup>5</sup> Fowler and Baldrige,<sup>6</sup> Yater,<sup>7</sup> Frothingham,<sup>8</sup> Evans,<sup>9</sup> Parkinson and Campbell,<sup>10</sup> White,<sup>11</sup> Stroud<sup>12</sup> and Pardee,<sup>13</sup> along with innumerable other prominent workers, have found auricular fibrillation to exist with such conditions as rheumatic heart disease, arteriosclerosis and hyperten-

sive vascular disease, acute coronary thrombosis, thyrotoxicosis, chemical poisoning, alcoholism, infectious fevers, postoperatively and in congestive heart failure, the last named adding to the gravity of auricular fibrillation and, conversely, a persistent auricular fibrillation ultimately resulting in heart failure. Basically, auricular fibrillation is a mode of action of the auricles in which the fibers contract incoordinately. This obviously causes the ventricles to respond irregularly, as many impulses reach the ventricle at variable intervals. This auricular disturbance is accountable for approximately 50 per cent of the cardiac arrhythmias.

1. In auricular fibrillation there is an absence of a P wave preceding each ventricular wave. 2. In the interval between ventricular responses there are continual fine wavelets varying in height, width and rate. 3. The wavelets are more prominent in mitral stenosis. 4. A fast ventricular rate may obscure such oscillations. 5. The T wave is deformed if prominent. 6. Standard, precordial or esophageal leads can be used for the detection of such an arrhythmia.

One is familiar with the fact that in poliomyelitis, following an acute attack, the patient is left with a

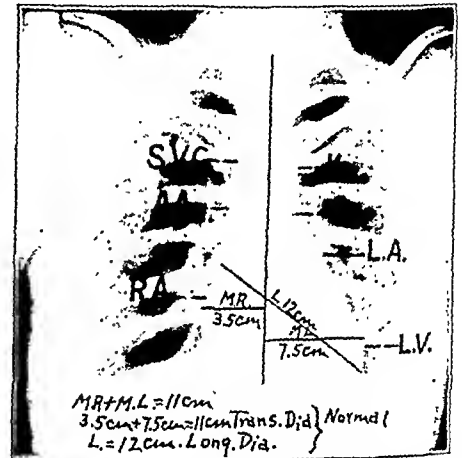


Fig. 1 (case 1).—Poliomyelitis. The heart is normal. R. A., right auricle; A. A., ascending aorta; K., aortic knob; L. A., left auricular appendix; L. V., left ventricle; S. V. C., superior vena cava; P., pulmonic curve.

weakened musculature. Wagoner<sup>14</sup> shows that the following muscles are involved in the lower extremities: hamstrings, tibialis anticus, peroneals, gastrocnemius and soleus. In the upper extremities the deltoid and brachial muscles are involved. If the vagus is involved there is hoarseness of the voice or loss of voice.

Carter<sup>15</sup> has mentioned artefacts of an intrinsic nature occurring from muscular tension, tremor or tic, voluntary muscular contractions and high resistance of the skin.

In case 1 these factors relative to the associate causes of auricular fibrillation are absent. On the contrary, the evidence presented tends to establish the fact that, apart from the fibrillation, the heart is normal.

CASE 1.—History.—A. H., a woman, aged 22, a school teacher, complained of a throbbing sensation over the right side of the neck Oct. 23, 1936, of one week's duration. At 2½ years of age she had infantile paralysis which left both legs paralyzed:

14. Wagoner, G.: The Nonsurgical Orthopedic Treatment of Anterior Poliomyelitis, *M. Clin. North America* 18: 51-61 (July) 1934.  
15. Carter, J. B.: The Fundamentals of Electrocardiographic Interpretation, Springfield, Ill., Charles C. Thomas, 1937, p. 30.

1. Lewis, Thomas: *Clinical Electrocardiography*, ed. 5, London, Shaw and Sons, 1931, p. 93; *Diseases of the Heart*, New York, Macmillan Company, 1934, pp. 81-91.
2. Luten, Drew, and Jeffreys, E. O.: The Clinical Significance of Auricular Fibrillation, *J. A. M. A.* 107: 2099-2102 (Dec. 26) 1936.
3. Brill, I. C.: Auricular Fibrillation with Congestive Heart Failure and No Other Evidence of Organic Heart Disease, *Am. Heart J.* 13: 178-182 (Feb.) 1937.
4. Friedlander, R. D., and Levine, S.: Auricular Fibrillation and Flutter with Evidence of Organic Heart Disease, *New England J. Med.* 211: 624-629 (Oct. 4) 1934.
5. Smith, H. L.: Auricular Fibrillation: Mechanism, Significance, Incidence and Treatment, *M. Clin. North America* 19: 511-515 (Sept.) 1935.
6. Fowler, W. M., and Baldrige, C. W.: Auricular Fibrillation as the Only Manifestations of Heart Disease, *Am. Heart J.* 6: 183 (Dec.) 1930.
7. Yater, W. M.: Pathologic Changes in Auricular Fibrillation and in Allied Arrhythmias, *Arch. Int. Med.* 43: 808 (June) 1929.
8. Frothingham, Channing: The Auricles in Cases of Auricular Fibrillation, *Arch. Int. Med.* 36: 437 (Sept.) 1925.
9. Evans, W. A., Jr.: Long Standing Cases of Auricular Fibrillation with Organic Heart Disease: Some Clinical Considerations, *Ann. Int. Med.* 9: 1171 (March) 1936.
10. Parkinson, John, and Campbell, Maurice: Paroxysmal Auricular Fibrillation: A Record of 200 Patients, *Quart. J. Med.* 23: 67 (Oct.) 1930.
11. White, P. D.: *Heart Disease*, New York, Macmillan Company, 1937, p. 738.
12. Stroud, W. D.; LaPlace, L. B., and Reisinger, J. A.: The Etiology, Prognosis and Treatment of Auricular Fibrillation, *Am. J. M. Sc.* 185: 48 (Jan.) 1932.
13. Pardee, H. E. B.: *Clinical Aspects of the Electrocardiogram*, ed. 3, New York, Paul B. Hoeber, Inc., 1933, pp. 157-163 and 176-178.

now the right leg is flaccid and limp, necessitating a brace for the entire extremity. The left leg is now much larger and healthier in appearance than the right but not normal. At 7 years she had diphtheria, and during the last five years she had one attack of tonsillitis. The teeth are good. The tonsils are buried and unhealthy. There were no abnormalities over the region of which she complained. Her voice was somewhat hoarse. Auscultation revealed a heart rate of 74 beats to the minute, of fair quality, and there were no murmurs. The lungs

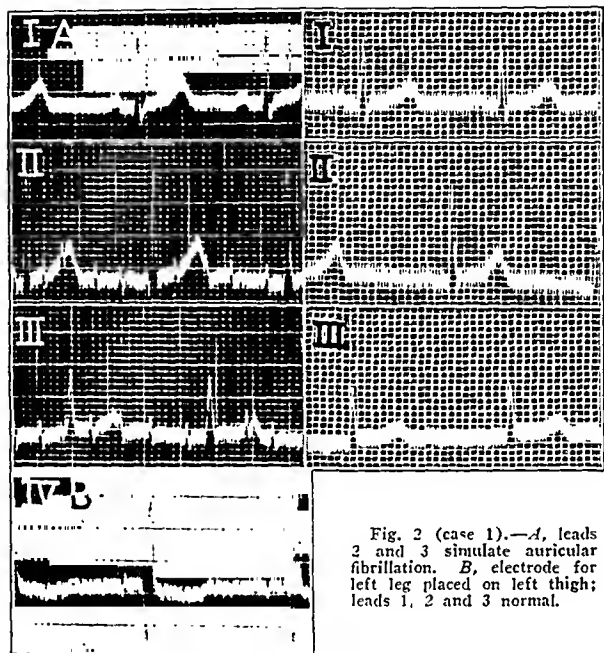


Fig. 2 (case 1).—A, leads 2 and 3 simulate auricular fibrillation. B, electrode for left leg placed on left thigh; leads 1, 2 and 3 normal.

showed slight congestion. The knee jerks were absent. The lower extremities were as already described, the right being decidedly flaccid and the left, on close examination, objectively slightly abnormal.

**Fluoroscopy.**—The lung fields lighted up well. There were a few scattered shadows in the regions of both hili. The diaphragm excursions were normal. The heart was medially placed and appeared normal in size. The movement of the heart from the aortic knob downward through the ventricles was a regular seesaw motion. The pulmonic curve appeared normal. The curve of the left border was convex. The lower curve of the right border was contracting very mildly inward concomitantly with the pulsations of the left auricular border. A normal condition was disclosed.

**Röntgen Examination.**—The transverse diameter of the medial right (3.5 cm.) plus that of the medial left (7.5 cm.) equals 11 cm. The longitudinal diameter equals 12 cm. These measurements for the patient's weight and height are normal as adopted by Polevski<sup>16</sup> (fig. 1).

A standard electrocardiogram was taken. The patient's brace was removed and left off during all subsequent tracings. The electrocardiograms were taken by the standard orthodox accepted method of Einthoven. With the electrodes in place on the right arm, left arm and left leg, and all attached to the galvanometer, a millivolt caused an excursion of 1 cm. of the string. This standardization applied throughout to all leads. The result showed the first lead to be normal except for an irregular spacing of the ventricular complexes (sinus arrhythmia), with the ventricular rate varying from 50 to 70 beats a minute. The second and third leads resembled those of auricular fibrillation. The "fibrillation" waves were visible in diastole, and also in the T waves with an absence of P waves (fig. 2). These tracings were checked and obtained each time. Then I sandwiched the patient between two normal persons. The

control subjects gave normal tracings in all leads, but the patient with the paralysis still presented the twitchings as before.

The following questions were propounded by me:

1. Is this a true auricular fibrillation?
2. Is this a vagotonia? Bramwell<sup>17</sup> reported an auricular fibrillation from injury to the vagus nerve.
3. Is this change from sinus arrhythmia in lead 1 to questionable auricular fibrillation in leads 2 and 3 neurogenic?
4. Is infantile paralysis formerly with resultant pathologic changes to the anterior horn cells and neuromusculature of the lower extremities accountable for this phenomenon in leads 2 and 3?

Dr. Horatio B. Williams of Columbia University offered me the following suggestions and proof:

1. The notchings are not auricular fibrillation or auricular flutter.
2. They are not artefacts in the electrocardiograph.
3. In his opinion they were muscle tremors from the left leg.
4. The application of one electrode on the left ankle and another electrode on the left thigh should show the same sort of notchings from the muscle tremor.
5. One electrode should be applied on the left ankle and another electrode on the right ankle.
6. These procedures then would give a record of the muscle twitchings independently of an electrocardiogram.

It is accepted by cardiologists in taking a standard three lead electrocardiogram patterned after the Einthoven method, if such a procedure is impossible because of the loss of an extremity (amputation), that the electrode for that extremity be placed above the stump terminus. With this thought in mind, although an amputation was not done here, I placed the left leg electrode on the lateral part of the left thigh. The three standard leads were then taken and were normal. The notchings were absent (fig. 2B). Therefore, the notchings are somatic in the left leg, as

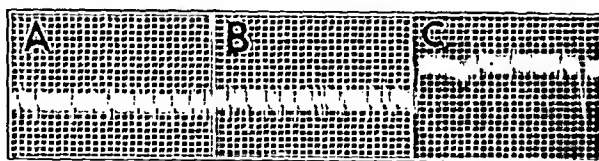


Fig. 3 (case 2).—A, electrodes placed on left thigh and left ankle; somatic muscle tremor isolated independent of an electrocardiogram. B, electrodes placed on right ankle and left ankle; somatic muscle tremor is isolated but was the complicating factor in figure 2A. C, electrode for right arm placed on left leg, and that for left leg placed on right arm; a reversed electrocardiogram with notchings due to left leg.

they are present only when the electrode on the left leg is placed in its normal position on the left leg and absent when placed on the thigh.

In following Williams' suggestion for proof 4, the right arm electrode was applied to the left ankle and the left leg electrode was applied to the left thigh with the selector switch turned to lead 2. This resulted and showed notchings of the left leg independent of an electrocardiogram (fig. 3A). In figure 2 these notchings were the simulating and complicating anomalies, as the left leg is used in standard leads 2, and 3.

16. Polevski, Jacob: *The Heart Visible*, Philadelphia, F. A. Davis Company, 1934, p. 60.

17. Bramwell, Crighton: Can a Head Injury Cause Auricular Fibrillation? *Lancet* 1: 8-9 (Jan. 6) 1931.



Then the left arm electrode was applied to the right ankle, and the left leg electrode to the left ankle with the selector switch turned to lead 3 (suggestion 5). This tracing shows the same notchings independent of an electrocardiogram (fig. 3 *B*). In figures 3 *A* and *B*, 1 millivolt caused only 8 mm. of deflection.

Finally the electrode for the right arm was placed on the left leg and that for the left leg electrode was placed on the left arm with the selector switch turned to lead 2. This gave a negative QRS, also with notchings in the electrocardiogram. The process was reversed with the left leg in play (fig. 3 *C*).

CASE 2.—J. C., aged 74, has a typical rheumatic heart with mitral valvular involvement along with arteriosclerotic factors to show auricular fibrillation as compared with somatic intrinsic muscular notchings. The electrocardiogram (fig. 4 *A*) shows auricular fibrillation before digitalis therapy, a right

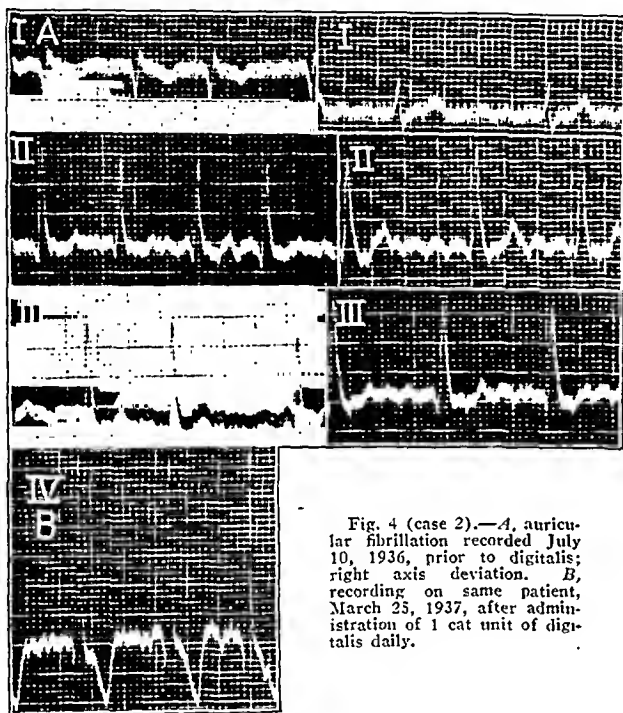


Fig. 4 (case 2).—*A*, auricular fibrillation recorded July 10, 1936, prior to digitalis; right axis deviation. *B*, recording on same patient, March 23, 1937, after administration of 1 cat unit of digitalis daily.

axis deviation, a fast, irregular ventricular rate, no PR interval, normal QRS, 0.08 second, and slurring and thickening of R in leads 2 and 3. There is a negative T in lead 1 and a diphasic T in lead 2. This tracing then shows an auricular fibrillation with evidence pointing to myocardial degeneration complicated by coronary changes. Eight months later (fig. 4 *B*) a tracing was taken from the same patient after receiving 1 cat unit of digitalis daily during that time. The wavelets are prominent and the ventricular rate, though irregular, is down to 82 beats a minute, compared to a previous variation of from 110 to 130 beats eight months before.

#### COMMENT

Katz and Korey<sup>18</sup> found it necessary to adopt unorthodox leads in attempting to evaluate electrical deflections because of the varying conductivity of structure. The somatic tremor in the patient who had had poliomyelitis was subjective and intrinsic. It was picked up and isolated by the electrocardiograph.

Obviously the somatic muscle tremor as seen in figure 2 *A* in leads 2 and 3 presents difficulties and doubt as to such oscillations being of somatic or cardiac

origin. Clinically, however, that doubt is solved, and the methods as outlined by Williams will clear up the underlying disturbing factors electrocardiographically.

#### SUMMARY

1. These two cases are compared to illustrate the similarity of somatic muscle tremor as obtained on a patient with the aftermath ravages of poliomyelitis and on one with a true rheumatic heart disease with arteriosclerotic involvement showing true auricular fibrillation.

2. The evidence present in the case of poliomyelitis tends to establish the fact that, apart from the fibrillation episode, the heart is normal.

3. The associated clinical pathologic conditions found in true auricular fibrillation are not found in this particular poliomyelitis patient.

4. In figure 2 *A*, leads 2 and 3, there is an absence of a P wave preceding each ventricular wave. These notchings complicate correct interpretation. They simulate auricular fibrillation.

5. Proof is established that the twitchings or notchings in figure 2 *A* are not true auricular fibrillation or auricular flutter.

6. Proof is established in figure 2 *B* and figure 3 that the notchings were of somatic origin and located in the left leg.

7. The electrocardiograph did not have anything to do with the production of these intrinsic artefacts (fig. 2 *A*).

8. The electrocardiograph by unorthodox placing of electrodes on the body offers a method of detecting subjective tremors aside from an electrocardiogram.

220 Farmington Avenue.

## Clinical Notes, Suggestions and New Instruments

### FEMORAL OVARIAN HERNIA

FRED H. BOWEN, M.D., BALTIMORE

In 1924 Watson<sup>1</sup> was able to collect the reports of only twenty-two instances of femoral hernia in which the ovary was the sole occupant of the sac. A careful survey of the literature reveals that only one case has been reported since that time. In view of the rarity of this condition the following history is recorded. (The case is from the practice of Dr. N. W. Bonelli.)

#### REPORT OF CASE

Mrs. E. W., a white woman aged 38, admitted to the West Baltimore General Hospital, Aug. 24, 1937, complained of severe pain in the right femoral region of eleven days' duration.

The family history revealed no familial disease or hernia. There was a questionable history of rheumatic fever at the age of 5 years. The patient has been married for nineteen years. She has two children, one 18 and the other 9 years of age.

There was a long history of constipation. There were no cardiorespiratory or genito-urinary symptoms. Menstruation began at the age of 13 years but soon stopped and began again at the age of 15. It occurs in cycles of twenty-eight days and lasts from three to four days. There has been pain in the lower middle part of the abdomen one day prior to the periods "for many years."

About twelve years before admission she experienced an occasional dull pain in the right femoral region. Ten years before admission, when five months pregnant with her second child, she moved the piano. While doing this a small painless lump appeared in the right femoral region. This soon disappeared. Seven years later it was noted that the lump had

18. Katz, L. N., and Korey, H.: The Manner in Which the Electric Currents Generated by the Heart Are Conducted Away, *Am. J. Physiol.* 111: 83-90 (Feb.) 1935.

1. Watson, L. F.: *Hernia*, St. Louis, C. V. Mosby Company, 1924.

reappeared. It was about the size of an almond at that time. Aug. 12, 1937, she jumped up to remove some clothes from the line and experienced severe pain in the right groin. At the same time a lump appeared in the right femoral region and this had been present ever since. There was no nausea, emesis or diarrhea. Pain was severe and had persisted. It did not radiate. Aug. 16 Dr. Bonelli was consulted and he placed the patient in bed with an ice cap to the femoral region. The pain abated somewhat but did not completely subside. No history was obtained of any endocrine disturbances.

**Physical Examination.**—The patient was somewhat apprehensive, well developed and nourished and looked her age. No abnormalities were found except a mass about the size of a small hen's egg just below the right inguinal ligament in the region of the femoral canal. This mass was firm and gave one the impression of being nodular. No impulse was elicited on coughing. Pelvic examination was negative.

The urine and blood studies were negative. The Wassermann reaction of the blood was negative.

**Operation.**—The preoperative diagnosis was femoral hernia. The possibility of inguinal lymphadenopathy was not overlooked. Operation was done August 25, under avertin-nitrous oxide anesthesia. After the usual surgical preparation of the skin an incision was made below and parallel to the inguinal ligament. The femoral canal was exposed and found to contain the ovary. There was no well developed sac found. The point of exit was between the femoral vein and Gimbernat's ligament. The ovarian pedicle was clamped and doubly ligated with No. 2 chromic gut. The edge of the inguinal ligament was sutured to the pectineal fascia with plain No. 2 catgut. The skin was closed with black silk. The patient's postoperative course was uneventful and she left the hospital September 6 in good condition. Since operation the patient has menstruated once with no pain.

**Pathologic Report** (by Dr. Ralph Mostwill).—The gross tissue measured 2 inches (5 cm.) in length by about 1¼ inches (3 cm.) in diameter. The surface was smooth and on cut section showed a small amount of solid tissue on one edge giving rise to a smooth cystic area.

The first section showed young fibroblastic tissue and inflammatory tissue, blood pigment and some groups of lymphoid cells. No ovarian tissue was seen in the first section. The second section was similar in every respect to the first. There was also some myxomatous tissue present. The third section showed ovarian tissue. There was a definite ovarian stroma present. An old corpus luteum was present which contained a blood clot. There was a definite band of granulosa cells. The stroma itself was rather sparse and not quite as heavy as that seen in the normal ovary. There were several large blood vessels, several lymph spaces and a second ruptured graafian follicle.

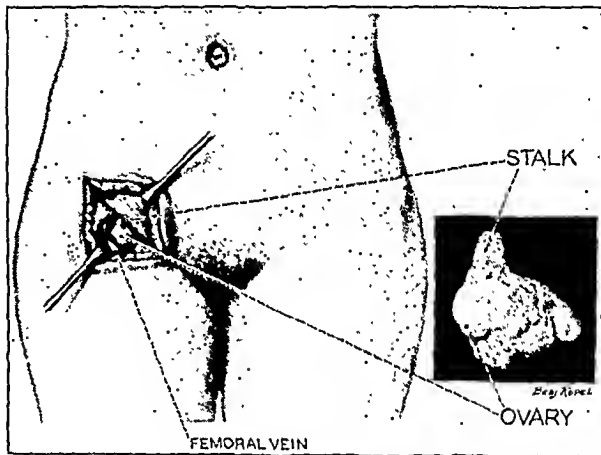
The diagnosis was ovary showing inflammatory changes.

#### COMMENT

The first case of herniation of the ovary was reported by Soranus of Ephesus in 97 A. D. He did not state whether this was a femoral or an inguinal hernia. A femoral hernia was believed to be a variety of inguinal hernia until 1572, when Guy de Chaliac pointed out the distinguishing features.

The descent of the ovaries is comparable to the descent of the testicles, but it is not so extensive. At first the müllerian and mesonephric ducts lie in a ridge on the surface of the mesonephros. The ovaries gradually move caudally from their original position. They reach the false pelvis about the third month of intra-uterine life and thence they migrate into the true pelvis at birth. Their descent into the pelvis is probably due to the surrounding parts growing proportionately more than the ovarian ligaments. Ectopic positions of the ovaries are not infrequent owing to complete or partial absence of the usual descent into the pelvis. On the other hand the ovaries may occasionally descend into the inguinal canal and may even be found in the labia majora. No mention of an ovary being congenitally present in the femoral canal was found in any of three standard textbooks examined. Congenital femoral hernia is a rare entity. In view of these and other facts it seems as if in the case reported here the hernia was acquired. The anatomy of femoral hernia may be found in any textbook.

The question of the etiology of hernia of the internal genital organs involves many factors. Heredity is frequently mentioned in the etiology of hernia. In support of this are cited many cases of three or four hernias occurring in the same family. Also to be considered are conditions associated with increased mobility of the uterine appendages, such as lengthening of the broad ligaments consecutive to repeated pregnancies. Because of the loose attachment of the ovaries to the broad ligaments, they are easily affected by the pathologic and physiologic displacements and movements that affect the pelvic organs. In this connection may also be mentioned pathologic relaxation of the uterine ligaments due to puerperal subinvolution. Abnormal length of the ovarian ligaments is also of importance. Lockwood and others<sup>2</sup> consider abnormal length of the mesovarium as the principal cause of ovarian hernia. In addition there are the conditions tending to increase of intra-abdominal pressure. A sudden increase in intra-abdominal pressure, a fall or coughing, may be the precipitating cause of the development of a hernia. Occupations necessitating repeated muscular effort such as lifting probably predispose to the formation of hernia. Physiologic or pathologic states that distend the abdominal cavity and enlarge the orifices usually present in the muscular and aponeurotic layers are important. Examples of these states are enteroptosis, obesity, abdominal tumors, ascites and pregnancy. All conditions that weaken the abdomi-



Artist's conception of the reported case.

nal wall are of etiologic significance. Among these may be mentioned acute or chronic diseases debilitating the organism, especially such as cause great emaciation, obesity and traumatism.

Femoral hernias most often contain omentum. If small intestine is present it is strangulated. Sometimes the sac contains the colon, cecum, appendix and bladder. Very rarely it contains the ovary, fallopian tube, uterus, testis, kidney, gallbladder and liver. Ahrens and Speigel<sup>2</sup> reported cases of incarceration of the stomach in the sac of a femoral hernia. The incidence of the internal genital organs in the order of frequency with which they are found in hernial sacs is ovary and tube, ovary, tube alone, nonpregnant uterus, pregnant uterus.

In hernias of short duration the herniated ovary is usually normal. Because of its position it is subject to trauma and circulatory disturbance. The position of the ovary in a hernial sac is unfavorable to its functional and anatomic integrity. Atrophy may occur, but it is usually not severe enough to check ovulation or menstruation. Cases of tuberculosis of the herniated ovary have been reported. In Mueller's<sup>3</sup> case of femoral ovarian hernia the ovary was cystic and two fibromyomas of the ovarian pedicle were present. The ovary may be enlarged, cystic, infiltrated with blood, the seat of a large hematoma or adherent to the sac, or it may present areas of suppuration or show gangrenous changes. One spindle cell sarcoma of the ovary has been found in a hernial sac. A

2. Cited by Heineck.<sup>4</sup>

3. Mueller, M. P.: Hernie crurale de l'ovaire par effort, Bull. et mém. Soc. d. chir. de Paris 2-1: 162-166 (March 4) 1932.

cystic ovary "the size of a man's head" was reported. In short, the conditions which affect the ovary in its normal position may be found in the herniated ovary. In addition, other disorders due to torsion, strangulation and trauma to the exposed ovary are seen.

Symptoms of herniation of the ovary are rare in children. The special sensitiveness of the ovary is said not to appear before the age of puberty. Enlargement and increased tenderness of the hernial swelling during the menstrual period are occasionally noted. Pain in the herniated ovary is usually most pronounced with the menstrual periods. Dysmenorrhea has been reported in femoral and inguinal hernia of the normal tube and the normal ovary. The ectopic ovary is hypersensitive, probably because of constant irritation. Irritation of the herniated organ may give referred pain or sensation to other organs of the reproductive system. Occasionally very severe pain is present, as in the case here reported.

According to Heineck,<sup>4</sup> any irreducible mass in the femoral or inguinal region in a woman should lead one to suspect herniation of the internal genitalia. Diagnosis is difficult. On pelvic examination the fundus of the uterus is apt to be deviated to the side of the hernia,<sup>4</sup> and the cervix is deviated toward the opposite side.<sup>5</sup> If the uterus is manually moved toward the sound side it exerts traction on the herniated ovary.

Prompt surgical reduction and repair of the femoral hernia is the proper treatment. Too violent attempts at reduction of the herniated internal genitalia may result in harm to their anatomic and physiologic integrity. Trusses are notoriously inadequate in the treatment of crural herniation. In view of this and of the trauma caused by the truss it has small place in the treatment of this condition. Early correction in children is advisable in order to prevent developmental defects. Occasionally it is necessary to amputate the herniated ovary because it cannot be reduced, as in the present case.

Rayner and Dinkeland avenues.

#### TICK PARALYSIS IN SOUTH CAROLINA

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Tick paralysis has been recognized in some of the Midwestern states for a number of years. It is an ascending type of paralysis, following the course of Landry's disease, at times resulting in death from bulbar involvement, associated with the bite of ticks and promptly disappearing when the feeding tick is found and removed.

Brief reference is made to the subject by Osler and McCrae<sup>1</sup> in which they state that the genus *Ixodes* and the genus *Dermacentor* are both capable of producing this type of paralysis. They refer to reports of cases from British Columbia, Wyoming, Montana and possibly Australia.

Tyzer<sup>2</sup> states that ticks of the genus *Ixodidae* are responsible for a paralysis occurring in sheep and in children, and that bites along the vertebral column and head are most prone to result in the paralysis. He speaks of the condition as having occurred in Oregon, British Columbia, Australia and South Africa.

Barnett,<sup>3</sup> in reporting a case of tick paralysis from the state of Washington, identifies the tick responsible for this condition

as the Rocky Mountain wood tick, *Dermacentor andersoni* Stiles, and calls attention to the fact that this tick has been found in thirteen states roughly adjacent to the Rocky Mountains while tick paralysis in man has been reported only from the five states of Montana, Oregon, Wyoming, Idaho and Washington.

Tick-borne diseases are now recognized as occurring in the eastern part of the United States. Badger, Dyer and Run-

reich<sup>4</sup> have reported on infections of the Rocky Mountain spotted fever type in general, and Montgomery<sup>5</sup> and Mayer<sup>6</sup> have reported cases of this type that have occurred in the state of South Carolina. Consequently the recognition of a case of tick paralysis in South Carolina becomes a

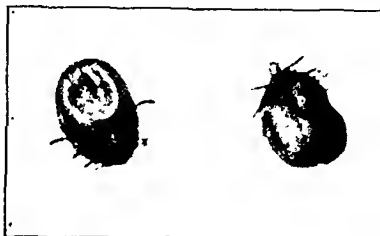


Fig. 2.—At left, dorsal view of tick; at right, ventral view of tick after removal from patient's scalp.

matter of more than passing interest in that it is probably the precursor of other cases in which prompt recognition is the one effective means of handling.

Paralysis resulting from the bite of a tick is presumably due to a noninfectious toxin which is liberated into the blood of the host while the tick is feeding. Experimental tick paralysis has been produced in animals by permitting female wood ticks to feed on them for a period of from one to two weeks, but it has not been found possible to transmit the disease by the blood of the affected animals or from the intestinal contents of the feeding ticks. The toxin responsible for the paralysis is supposed to come from the salivary glands of the ticks. Barnett refers to the work of Regendanz and Reichnow, who found that an extract of eggs from the common dog tick, injected into dogs, produced muscular weakness in the large animals and paralysis and death in the smaller ones. Except for the fact that tick paralysis usually develops after a female tick has fully fed on the host, at which time, in nature, she is impregnated and ready for egg laying, there is nothing to suggest that the tick egg is related to tick paralysis in man. It is assumed that a feeding period of from five to six days is required for the tick to inject sufficient toxin to produce the changes in the central nervous system that lead to paralytic phenomena.

The symptoms usually begin in the lower extremities. Paresthesias, numbness and tingling frequently appear first but are quickly followed by muscular weaknesses and incoordination. The weakness may progress to complete flaccid paralysis. The upper extremities are then involved in similar fashion, and this is followed by indications of bulbar involvement, difficulties in speech, respiration and deglutition. If the tick is found and removed, there is a remarkably rapid reversal of the signs and symptoms, and a threatening condition in large part disappears within a period of from twenty-four to forty-eight hours. If the tick is not discovered, the bulbar paralysis may lead to death, especially in the case of children, while adults tend to have a slow, spontaneous recovery.

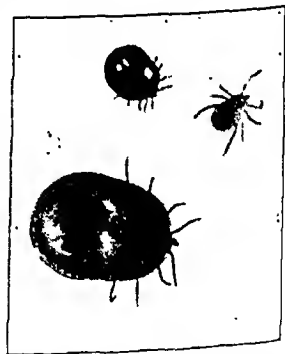


Fig. 3.—Tick removed from patient's scalp, uppermost in group, compared with wood tick before and after eating.



Fig. 1.—Wood tick attached to scalp in right occipital region.

4. Heineck, A. P.: Hernias of the Ovary, of the Fallopian Tube and of the Ovary and Fallopian Tube, Surg., Gynec. & Obst. 15: 63-109, 1912.

1. Osler, William, and McCrae, Thomas: The Principles and Practice of Medicine, ed. 9, New York, D. Appleton & Co., 1920.

2. Tyzer, E. E.: The Relation of Insects and Other Arthropods to Disease, Oxford Medicine 5: 966 (22), 1927.

3. Barnett, E. J.: Wood Tick Paralysis in Children, J. A. M. A. 109: 846 (Sept. 11) 1937.

4. Badger, L. R.; Dyer, R. E., Runreich, A. S.: Infection of Rocky Mountain Spotted Fever Type: Identification in Eastern Part of United States, Pub. Health Rep. 46: 463 (Feb. 27) 1931.

5. Montgomery, B. M.: A Disease of the Rocky Mountain Spotted Fever Type, J. South Carolina M. A. 29: 40 (Feb.) 1933.

6. Mayer, O. B.: Rocky Mountain Spotted Fever in South Carolina, J. South Carolina M. A. 29: 209 (Sept.) 1933.

## REPORT OF CASE

The following case presents a classic example of tick paralysis:

**History.**—Mrs. H. E. T., a resident of Columbia, S. C., while on a visit to Greenville, went on June 19 to inspect some prize pigs. Four days later she experienced the sensation of tingling and numbness in the lower extremities. In the latter part of the same day the legs felt weak and she "did not know just where they were going." The next morning her legs would not support her body and she noticed numbness and tingling in the upper extremities. She was brought to Columbia in an ambulance, and, on arrival, stated that she was aware of a weakness in the arms and hands. She had had no difficulty in talking or swallowing. She was greatly alarmed about herself.

**Physical Examination.**—The patient was of fair nutrition and good color. She was in a semihysterical condition. The skin showed no abnormal eruptions or pigments. The eyes were not prominent, the pupils were equal and reacted normally, the extrinsic eye muscles functioned normally, and there was no nystagmus and no icterus. The nose, ears and throat were negative. The teeth were false. The thyroid was not enlarged. There were no enlarged lymph glands. The heart was not enlarged, the sounds were clear at the apex and base and the heart action was slow and regular. The lungs were clear. The abdomen was of normal appearance. There was no tenderness. There were no masses and no palpable organs. The extremities showed no edema and there was no fine tremor of the fingers. The joints were negative. The pulse was 92 and regular. The temperature was 100 F. (5 p. m.). The blood pressure was 140 systolic, 80 diastolic. The eyegrounds showed no abnormalities.

**Neurologic Examination.**—The muscles showed some loss of strength in the legs with definite incoordination in the movements. The knee to heel test showed pronounced ataxia, and the movement was carried out with extreme difficulty. There was no demonstrable weakness in the upper extremities. Sensation gave normal response to all modalities throughout. The Babinski responses were normal. The ankle jerks and knee kicks were absent. The abdominal skin reflexes were not present. The deep tendon reflexes at the wrists and elbows were present. The jaw jerk was normal.

**Course.**—June 25 the weakness in the lower extremities was more pronounced. There was demonstrable weakness in the muscles of the arms and hands and there was definite ataxia in the movements of the upper extremities.

June 26 the weakness and ataxia in the upper extremities was so pronounced that the patient could not feed herself.

June 27 the patient stated that she thought her legs felt somewhat better. But her upper extremities had shown no improvement and her speech had become thick. She had had no difficulty in swallowing. She called attention to a "tumor on the scalp" which had been found by a nurse in combing her hair. Inspection showed a fully distended wood tick, measuring 1.5 by 1 cm., attached to the right occiput. The tick was removed.

June 28 the patient stated that she "felt better all over."

June 29 the patient seemed entirely well. The knee kicks had returned and the abdominal skin reflexes were present. The impediment in speech had disappeared.

July 1 the patient was dismissed from the hospital.

On admission to the hospital the patient's temperature was 100 F. This was the only rise above normal throughout the course of illness. The laboratory studies on the blood, urine and stool were unimportant.

July 15 the patient was at my office and seemed none the worse for her experience.

## CONCLUSIONS

A case of tick paralysis occurred in South Carolina. Attention is called to it because of the importance of recognizing this condition as a possibility in the eastern part of the United States and of the necessity for finding the tick and removing it as a means of curing the patient.

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## Special Article

HUMAN REQUIREMENTS FOR  
VITAMIN B<sub>1</sub>

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*This article and others recently published or to be published comprise a new series on the present status of our knowledge of the vitamins. They have been prepared under the general auspices of the Council on Pharmacy and Chemistry and the Council on Foods. The opinions expressed are those of the authors and not necessarily the opinions of either council. Reprints are not available but the articles will be published later in book form.—Ed.*

Other papers in this series discuss the chemistry of vitamin B<sub>1</sub>, the pathology of vitamin B<sub>1</sub> deficiency and the physiologic function of this dietary essential. What can be said concerning the amount of this vitamin needed by man?

As beriberi is due to lack of vitamin B<sub>1</sub>, it is natural that the earliest estimates of the human requirement of this factor should have been in terms of the therapeutic value of certain foods. For example, Hulshoff-Pol<sup>1</sup> studied the efficacy of katjang idjo, a native bean (*Phaseolus radiatus*), in the cure of beriberi. The practical result of this type of investigation was to focus attention on the importance of foods containing vitamin B<sub>1</sub> and therefore their inclusion in the dietary. All work along this line prior to about 1911, when Funk<sup>2</sup> introduced the word "vitamine," necessarily suffered the disadvantage that controversy still prevailed respecting the exact cause of beriberi and therefore the validity of any dietary measures in its treatment. In 1907 Braddon<sup>3</sup> published his impressive monograph "The Cause and Prevention of Beriberi," in which he championed the idea that subsistence on a white rice diet is responsible for beriberi, but explained the disease as due to a toxin present in the rice. Although this explanation was later shown to be erroneous, Braddon's book has rendered a great service to students of beriberi because it contains a vast amount of information relating to beriberi epidemics. This material was reexamined in the light of the deficiency disease hypothesis by Vedder,<sup>4</sup> whose book appeared almost immediately after the word "vitamine" had been suggested by Funk. When it had become clear that beriberi is fundamentally a vitamin deficiency and that it is possible to study the protective factor in experimental animals, a new kind of evidence<sup>5</sup> bearing on the question of the human need for this vitamin appeared in the scientific literature, evidence based on comparisons of the requirements of different species of animals and their suggestions for the human species. For the ideal type of information needed to answer the question of the human requirement for this vitamin it was of course necessary to await isolation of the factor in pure form and tests of it on the human species, something accomplished only

1. Hulshoff-Pol, D. J.: Katjang Idjo, un nouveau médicament contre le beriberi, *Janus* 7: 524-534, 1902.

2. Funk, Casimir: The Chemical Nature of the Substance Which Cures Polynuritis in Birds Induced by a Diet of Polished Rice, *J. Physiol.* 43: 395-400, 1911.

3. Braddon, W. L.: The Cause and Prevention of Beriberi, New York, Rebsman Limited, 1907.

4. Vedder, E. B.: Beriberi, New York, William Wood & Company, 1913.

5. Cowgill, G. R.: The Vitamin B Requirement of Man, New Haven, Yale University Press, 1934.

recently.<sup>6</sup> In the light of this development of the subject it must be obvious that it has not as yet been possible to make as many tests with the pure vitamin as might be desired, but that these may reasonably be expected in the near future.

From Osborne and Mendel's<sup>7</sup> quantitative experiments in 1922, designed to determine the rat's need for vitamin B, it became clear that the requirement for this factor increases with increase in body weight. In 1923 I was much impressed with the fact that, per unit of body weight, the rat was found to require roughly five times more vitamin B (or vitamin B<sub>1</sub>, according to the newer terminology) than the dog. This suggested that man, a still larger species, might be found to require relatively even less than the dog. From what was known at the time regarding the adequacy of human diets and the rat's need for vitamin B<sub>1</sub> it was evident that man could not possibly require relatively as much as the rat. It occurred to me that quantitative experiments on as many species as possible might lead eventually to knowledge applicable to man. Such experiments were therefore made on four species, the mouse, rat, pigeon and dog. All of these tests were made with the same vitamin B<sub>1</sub> concentrate in order to avoid error due to the presence of unknown dietary essentials, the amounts of which might vary in different materials. Preliminary observations of cures of animals suffering from advanced B<sub>1</sub> deficiency gave such variable results that it was decided to make the desired quantitative tests on animals as nearly normal as possible. Therefore the prevention of the characteristic anorexia which appears in response to lack of vitamin B<sub>1</sub> was made the physiologic sign of interest.

When the minimum dosages of vitamin for a given species were plotted on coordinate paper against body weight, a curve resulted. Attempts to secure a straight line finally resulted in the discovery that the dosage of vitamin was in an approximately linear relationship to the body weight raised to the five-thirds power. This first approximation type of relationship was found to hold quite well within the ranges of body weight studied in the four species, a fact which naturally suggested that it would also hold for the human species. It was further observed that the values of the equating constant ( $K_{v_1}$ ), derived from the plots of data for the various species, were in some way related inversely to the "average maximum size" of the species, the mouse requiring the most and the dog the least per unit of body weight, with the rat and the pigeon in appropriate intermediate positions.

Obviously it was necessary to determine in more detail the nature of this inverse relation to body size if the human requirement was to be found. This was finally achieved with accuracy sufficient for the purpose by comparing the various species on the basis of a new variable called the maximum normal size of the species. When this was done it was possible to place all the species on the same straight line with respect to the vitamin B<sub>1</sub> requirement. It was then evident that a value for the human requirement would be suggested by the "maximum normal weight" for man. Data on weight were secured from actuarial tables and a formula then constructed by which to express man's need for vitamin B<sub>1</sub>.

The next step in the investigation consisted of actual tests of this expression to determine its validity and limitations, if any. In order to do this it was necessary (1) to estimate as accurately as possible the vitamin B<sub>1</sub> content of various diets known to have been associated with the presence or absence of beriberi and (2) to apply the new formula to the persons who ate those diets. This is hardly the place to review the results of the study in any detail; the interested reader is referred to the monographic report.<sup>8</sup>

Let it suffice to point out that examination of numerous diets known to have been associated with epidemics of beriberi revealed that their contents of vitamin B<sub>1</sub> were indeed too small to have met the estimated needs of the persons subsisting on them; therefore beriberi should have appeared, as it did. Likewise, numerous diets known to have been associated with absence of beriberi were found to contain amounts of the vitamin above those estimated to have been required by the persons eating them. These calculations naturally required some knowledge of the vitamin B<sub>1</sub> content of numerous foods, and a large body of information was obtained indirectly from consideration of assay data in the literature. It is worthy of note that a similar study of beriberi diets made by Baker and Wright,<sup>9</sup> using for the calculations the results of food assays made by the same method in the same laboratory, has yielded essentially the same results. Another confirmation has come out of the work of Van Veen<sup>9</sup> carried out in Java.

In this connection it is pertinent to point out that I have always considered the formula derived from this research as constituting merely a first approximation. In the final chapter of my monograph I particularly invited the cooperation of workers everywhere in the confirmation or determination of limitations of these results and the deductions drawn from them. Considering the indirect nature of the approach to the problem, the necessity for making numerous assumptions, and the possibilities resident in further researches in this field, it would be most surprising indeed if the results of this first approximation study should not require modification as a result of later discoveries, particularly those made possible by the isolation and ready availability of the pure vitamin.

Certain difficulties in my work, to which a critic might call attention, have always been appreciated. For example, in the rat the five-thirds power relationship, strictly speaking, applies only to animals ranging from about 70 to 150 Gm. in body weight, for the data obtained and discussed were yielded by animals of this size. It may be a quite unjustified extrapolation to apply the formula to larger animals. However, it is certainly significant that when Drs. W. H. Eddy and M. Kellogg repeated the study on rats they found precisely the same relationship to hold with animals up to about 150 Gm. weight; with larger animals, however, the formula did not hold. It may be that the formula stands in some relation to growth, or more particularly the changing caloric exchange characteristic of growth, and this idea receives support from the work of Hendricks.<sup>9a</sup> On examination of the caloric intakes of rats of different weights, taking for example the food intake

6. Williams, R. R.: The Chemistry of Thiamin (Vitamin B<sub>1</sub>), J. A. M. A. **110**: 727 (March 5) 1938.

7. Osborne, T. B.; Mendel, L. B., and Cannon, H. C.: Quantitative Aspects of the Role of Vitamin B in Nutrition, J. Biol. Chem. **54**: 739-752 (Dec.) 1922.

8. Baker, Audrey Z., and Wright, Margaret D.: Vitamin B<sub>1</sub> in Human Diets, Proc. Roy. Soc. Med. **29**: 1145-1154 (July) 1936.

9. Van Veen, A. G.: Het B<sub>1</sub>-type gehalte van voedingsmiddelen (summary and discussion given in English on last two pages), Geneesk. tijdschr. v. Nederl.-Indië **75**: 2050-2064 (Nov. 26) 1935.

9a. Hendricks, W. A.: The Relation of Vitamin B Requirement to Metabolism, Am. J. Physiol. **105**: 678-683 (Sept.) 1933.



data of Osborne and Mendel cited in my monograph (on page 82), one obtains over the range of weights covered by these vitamin B experiments a curve similar to the ordinary growth curve, but after about 150 Gm. of body weight the plot of caloric intake against weight proves to be practically a straight line with caloric intake increasing slowly with increasing body weight. In view of these considerations it is quite possible that the five-thirds power relationship set forth in the vitamin formula does not apply to these large rats but that some other relationship holds. The same point of view applied to the dog may help to explain why the five-thirds power formula gives as the quantity of vitamin B required by a large Newfoundland dog, for example, an apparently altogether too large amount.

I am also aware that my plot of species vitamin constant against maximum normal weight of the species involves a plot of logarithms against logarithms, and therefore the points actually plotted may represent appreciably variable instead of quite fixed values. Even in the face of this fact it appears obvious to me that one still obtains as the outstanding feature of the resulting plot a definitely inverse relationship of species vitamin B<sub>1</sub> requirement to maximum normal size of the species. Furthermore it seems especially significant that it was from this particular plot that a suggestion was obtained of the appropriate constant to use in the formula applicable to man; and tests of the formula thus derived on various human diets have given essentially the same results as those yielded by other workers who have used more recent and exact data on vitamin contents of foods, as well as experimented with the pure vitamin. It is difficult to believe that such an outcome and confirmation of the formula can be merely fortuitous.

The formula (see table) indicates that the value of the vitamin B<sub>1</sub>:calory ratio increases with increase in body weight. In a personal communication Dr. R. R. Williams has expressed his disagreement with this point. He feels that the fundamental relationship is merely between vitamin B and carbohydrate or non-fat calories. In the light of the newer researches indicating a probable role of this vitamin in the metabolism of carbohydrate,<sup>10</sup> such a view is well supported. However, the question as to whether the critical value of the vitamin:calory ratio increases with increase in body size can hardly be disposed of in such simple fashion in my opinion. With the perfection of chemical methods for analysis of blood and urine for vitamin B<sub>1</sub> and their application in studies of vitamin B<sub>1</sub> physiology, it should be quite possible sooner or later to obtain data bearing definitely on this question. From certain preliminary observations which Jolliffe and collaborators have shown me it is reasonable to believe that the value of this ratio may indeed prove to vary with body weight as I have already suggested. For all practical purposes and the evaluation of human dietaries the settlement of this question may be quite academic. The final answer will probably be obtained only when experiments specially designed for the purpose have been performed.

The formula by which to estimate a given person's requirement for vitamin, as stated originally, expressed the vitamin variable in terms of the milligram-equivalent, a unit based on the particular yeast concentrate used in the studies from which the formula was derived. It is of course more desirable that the international unit be used, and a table giving factors for converting

the milligram-equivalent to the international. Sherman and other units was included in the monograph describing the formula. From a theoretical point of view the ideal unit is a given amount of the pure crystalline vitamin, i. e., thiamin chloride, and it seems likely that sooner or later the international committee will adopt such a standard. In view of these considerations, therefore, I have prepared the accompanying table, by means of which any investigator may use my formula to obtain the vitamin values in terms of the present international unit and various representative quantities of thiamin chloride. It is obvious that the value of only the equating constant is affected when different units are used for expressing the vitamin variable, and therefore only the appropriate values of K<sub>vit</sub> need be given in the table.

It will be noticed that the table gives values of the equating constant for different quantities of thiamin chloride. Several investigators have reported different amounts of the pure vitamin as equal to the present international unit. The smallest and the largest quantity suggested have been 2 and 5 micrograms, respectively, which would mean that from 500 to 200 international units is contained in 1 mg. of thiamin

Table for Obtaining Vitamin Values

When vitamin is expressed in terms of the units indicated below, the value of K<sub>vit</sub> to use in the formula  $\frac{\text{vitamin}}{\text{calories}} = K_{vit} \cdot \text{weight}^{\frac{1}{3}}$  in gram is that shown in the table.

Unit of Vitamin B	K <sub>vit</sub>
Milligram-equivalent (Cowgill) <sup>9</sup> .....	0.0284
International unit (1934).....	0.00142
Micrograms of thiamin chloride when 1 international unit is taken as equal to	
2 micrograms.....	0.00284
3 micrograms.....	0.00426
4 micrograms.....	0.00568
5 micrograms.....	0.0071

chloride. These variations are doubtless to be attributed to the fact that the different investigators have not used the same biologic test. It seems reasonable to believe that, if the international committee decides to establish a new unit based on the pure vitamin chloride, the selected quantity will be between 2 and 5 micrograms. From the data given in the table it will be a simple matter to determine what value of the equating constant to use in the formula to give the vitamin values in terms of the new international unit.

It should be emphasized that estimates of the human requirement for vitamin B derived from my formula pertain to the minimum or beriberi-preventing level; the optimal intake is undoubtedly much greater. What should be taken as the optimal requirement will be discussed later.

#### THE NORMAL ADULT

What does the formula suggest as the minimum vitamin B<sub>1</sub> intake necessary for the adult human being? Obviously the weight is significant. Also, as the formula indicates, the vitamin requirement is related to the caloric intake, and, in view of what is known about the probable function of the vitamin in the body,<sup>10</sup> a still closer approximation would be with respect to the calories from carbohydrate metabolism. Assuming an average degree of activity and therefore level of daily energy intake, it appears that a man weighing 45 Kg. (99 pounds) requires as a minimum about 135 international units of the vitamin; a person weighing 70 Kg. (154 pounds) needs approximately 280 international

10. Cowgill, George R.: The Physiology of Vitamin B<sub>1</sub>, J. A. M. A. 110: 805 (March 12) 1938.

units, and a still heavier person weighing 90 Kg. (198 pounds) requires about 550 international units. Obviously the exact figure depends very much on the number of calories involved or taken in the calculation.

These values agree quite well with those suggested by other students of the problem. Thus Jansen, working with the small stature races of the Far East, estimated that from 1 to 2 Gm. of the international standard adsorbate was required daily as a minimum, with about 4 Gm. constituting a curative dose for patients with beriberi. Since 1 international unit is defined as the activity of 10 mg. of the standard adsorbate, his dosages can be translated to from 100 to 200 international units as the daily minimum and 400 international units for the cure of beriberi. These minimums, pertaining to people with body weights ranging from about 45 to 60 Kg., obviously agree very well with those suggested by the formula.

Reference has already been made to the relationship of the vitamin requirement to the caloric intake. As it is easy to estimate the number of calories yielded by a given diet, a simple form of standard to use in expressing the vitamin need is the number of units of vitamin per hundred calories. Stated in this way the minimums cited mean approximately 10 international units per hundred calories. Rose<sup>11</sup> has examined the reports of numerous investigators and recommended a daily intake of 30 Sherman-Chase units per hundred calories as a liberal allowance, an intake which would be equal to 15 international units per hundred calories. As pointed out by Daniel and Munsell,<sup>12</sup> "for the average adult this would mean between 750 and 900 Sherman-Chase units, or roughly 250 to 400 international units per day, quantities admittedly well above the minimum requirement."

Vorhaus, Williams and Waterman<sup>13</sup> estimated that the normal adult takes in daily about 1 mg. of pure vitamin B<sub>1</sub>; they did not mean that this necessarily represents a definite requirement, however. If one assumes that from 3 to 5 micrograms of the pure substance equals 1 international unit, this estimate means a daily intake of from 333 to 200 international units, which is in the range of minimums previously suggested.

Evidence of another type bearing on this question may be cited in the work of Harris and Leong.<sup>14</sup> These investigators studied the excretion of vitamin B<sub>1</sub> through the kidney. The healthy adults studied by them, from 13 to 37 years of age and subsisting on normal diets, were found to excrete daily from 12 to 35 international units, or from 30 to 90 micrograms of the pure vitamin hydrochloride; this excretion was estimated to be approximately from 5 to 8 per cent of the total daily intake of the vitamin. These authors concluded that a urinary output of vitamin B<sub>1</sub> below 12 international units daily, or approximately 1 unit per hundred cubic centimeters, should be regarded as evidence for strongly questioning the adequacy of vitamin B<sub>1</sub> in the diet. On the basis of these observations the minimum daily standard for a man weighing 140 pounds (63.5 Kg.) was set at 200 international units.

It is evident that this estimate of the minimum agrees well with the others which have been cited.

Further data bearing on this question may be cited. Van Veen<sup>9</sup> has suggested 150 international units per day as the beriberi-preventing minimum suited for the inhabitants of the Dutch East Indies. From their studies of numerous dietaries throughout the world Baker and Wright<sup>8</sup> of London arrived at from 200 to 500 international units per day as the minimum for man. It seems pertinent to point out that the oriental races represented by the Van Veen report are normally of smaller stature than Europeans and Americans. The lower suggested minimum of Van Veen might be interpreted in the light of my formula as due to the vitamin: calory ratio having a lower value for these people of smaller body weight. Against this view, of course, it can be argued that these people eat less food and the fundamental relationship is really between the vitamin and the amount of food or number of calories ingested.

A still more recent contribution is seen in the work of a German group<sup>14a</sup> of investigators, who have suggested that the minimum for man is from 250 to 750 micrograms of thiamin per day. Since there is no unanimity of opinion regarding the number of micrograms of thiamin to be taken as equivalent to 1 international unit, it is difficult to say exactly how many international units these suggestions represent. Taking 1 international unit as equivalent to from 2 to 5 micrograms of thiamin, the range covered in the table, the lower figure (250 micrograms) might be from 50 to 125 international units; similarly the larger figure (750 micrograms) could be anywhere from 150 to 375 international units. What is probably more significant is the suggestion of these German authorities that from 1 to 2 milligrams of pure thiamin daily is needed for health, which agrees with the opinion of Williams and associates.

The perfection of chemical methods for analyzing the urine and other biologic fluids for vitamin B<sub>1</sub> should lead to further extensive studies to determine the extent to which an injected standard dose of the pure vitamin is excreted through the kidney and the relation of the amount excreted to the store in the tissues. If the tissue reservoir is not saturated, it is reasonable to suppose that a smaller fraction of the injected vitamin will be eliminated in a standard interval of time; with the tissues already storing the maximum amounts, greater portions of the injected test dose should be eliminated. Perfection of the technic for such a test would mean that a valuable clinical function test for vitamin B<sub>1</sub> deficiency had been obtained.

Such an "injection-saturation-excretion technic" has already yielded valuable results in studies of the body's requirement for vitamin C. It is of course possible that the same results would not be obtained with thiamin because of differences in function in the body, etc. Some preliminary observations, which Dr. N. Jolliffe and associates have shown me, suggest that this may after all prove to be the case, that vitamin B<sub>1</sub> differs from vitamin C in respect to tissue saturation and elimination. The entire subject merits extended study which should lead to results useful both to public health and hygiene and to clinical medicine.

#### MOTHER AND INFANT

What is known about the vitamin B<sub>1</sub> requirement of the human mother and her infant? The high inci-

11. Rose, Mary S.: *The Foundations of Nutrition*, New York, Macmillan Company, 1933.

12. Daniel, Esther, and Munsell, Hazel E.: *Vitamin Content of Foods: A Summary of the Chemistry of Vitamins, Units of Measurement, Quantitative Aspects in Human Nutrition and Occurrence in Foods*, Miscellaneous Publication 275, U. S. Department of Agriculture, June, 1937.

13. Vorhaus, M. G.; Williams, R. R., and Waterman, R. E.: *Studies of Crystalline Vitamin B: Experimental and Clinical Observations*, J. A. M. A. 105: 1580-1584 (Nov. 16) 1935.

14. Harris, L. J., and Leong, P. C.: *Vitamins in Human Nutrition: The Excretion of Vitamin B<sub>1</sub> in Human Urine and Its Dependence on the Dietary Intake*, *Lancet* 1: 886-894 (April 18) 1936.

14a. Stepp, W.; Kuhnau, J., and Schroeder, H.: *Die Vitamine*, Stuttgart, F. Enke, 1937, p. 42.

dence of infantile beriberi in certain regions is evidence of the importance of this question. In this connection it is important to bear in mind two facts: 1. During the first six months of its life the human infant subsists almost entirely on milk and is therefore in the category of persons who live on a restricted dietary. 2. The amount of vitamin B<sub>1</sub> present in the milk has been shown to be dependent primarily on the quantity ingested by the mother. Studies on rats<sup>15</sup> have shown that for a lactating rat to nurse her litter successfully the vitamin B<sub>1</sub> intake must be about five times the amount needed for mere maintenance of the maternal organism. Studies of numerous dietaries<sup>16</sup> used in regions where beriberi is endemic have shown that they are low in vitamin B<sub>1</sub> content. For example, Baker and Wright<sup>16</sup> found the B<sub>1</sub> content of a group of such dietaries to range from 71 to 180 international units daily. It is not surprising, therefore, that the lactating women of many sections of the Far East who subsist on these faulty diets should secrete milk containing too small an amount of the vitamin for the infant and that infantile beriberi should be of common occurrence in these regions.

In 1935 the Technical Commission of the League of Nations Health Committee published a report entitled the "Physiological Bases of Nutrition,"<sup>17</sup> dealing particularly with the vitamin requirements of pregnancy and lactation and recommending during these two physiologic states a daily vitamin B<sub>1</sub> intake of from 150 to 250 international units. This suggestion is based on daily intakes of from 3,000 to 3,500 calories during lactation. In the light of the preceding discussion such a recommendation seems altogether too low. It is of course difficult to make any all-inclusive single statement as to what the human mother should consume daily (this is what the commission was attempting to do) because the factors which must be considered do not always operate to the same degree in every person. In lactation the body weight, the total caloric exchange and the volume of milk secreted all have a part as well as the intake of vitamin. It is possible that the recommendation of the commission may be regarded as reasonably satisfactory for the average woman of certain races normally smaller in stature than our own. For the American mother, however, I believe the daily vitamin B<sub>1</sub> intake might well be not less than 15 and preferably as high as 20 international units per hundred calories. If for any reason it is difficult to secure these higher levels of intake, obviously the vitamin may be given directly to the infant.

More exact data bearing on this question might be secured from a study of the effects in lactating women of various levels of vitamin B<sub>1</sub> intake on the concentration of the vitamin in the milk secreted; the intake giving the highest concentration of vitamin in the milk and above which no further increase is produced might be taken as the standard of vitamin B<sub>1</sub> intake during lactation in the human species. Now that the pure vitamin is available, it should be possible to perform experiments with the desired limitation of variables not possible hitherto. Studies of the maximum retention

of doses of pure vitamin administered to lactating women differing markedly in size and caloric intake should yield data useful in relation to this question.

This problem may also be considered from the standpoint of the vitamin intake of the nursing infant. The "American Public Health Year Book" for 1934-1935<sup>18</sup> states that the daily requirement for vitamin B<sub>1</sub> increases from 50 to 200 international units between infancy and adolescence. Should this lower figure, 50 international units, be regarded as a suitable optimum for the month old infant? If one considers the baby's daily caloric intake of human milk having the maximum amount of vitamin B<sub>1</sub> ever found, how much vitamin B<sub>1</sub> would the infant receive from such milk? My calculations give a figure approximately 80 international units instead of the 50 stated in the Year Book's recommendation. Until extensive quantitative studies have been made and this result shown to be erroneous, I suggest that 80 international units daily be taken as the optimum for the very young baby. One might perhaps call this a minimum, by which one would mean that no baby should receive less than this amount daily.

From theoretical considerations one should expect the vitamin B<sub>1</sub> requirement to be greater for growth than for maintenance. In addition to the vitamin consumed during the metabolism associated with mere maintenance of the organism, the growing person needs the vitamin which is to become a normal part of the new cells produced by growth. Furthermore, since the caloric exchange and the general level of energy metabolism are relatively higher during growth, one may also expect to find a higher vitamin B requirement for growth because of this increase in the variable in the formula representing metabolism. Dann and I<sup>19</sup> studied this question in the rat by comparing the amount of vitamin B<sub>1</sub> needed to secure the good growth characteristic of our colony with the amount required for maintenance at a given body weight after the rats had made good growth to that weight. The data indicated that the B<sub>1</sub> requirement for good growth in the female rat is from three to five times the need for mere maintenance.

#### THE CHILD

What is known about the child's need for vitamin B<sub>1</sub>? The formula discussed in the first part of this paper applies more strictly to the adult organism and gives only the beriberi-preventing minimum. Theoretically, children subsisting on a diet just sufficient for their parents should not acquire beriberi until by growth they have reached the approximate size of the parents. The primary effect of such a diet on the children would probably be some limitation of growth. This would explain why beriberi, although common among breast-fed infants of the Far East, is comparatively rare in children between the weaning age and early adult life. It becomes appropriate, therefore, to examine the growth of children in relation to the supply of vitamin B<sub>1</sub>.

It appears evident from the reports of several investigators that shortage of this vitamin has operated in part to limit the growth of children in North America. For example, Morgan and Barry,<sup>20</sup> in their study of

15. Evans, H. M., and Burr, G. R.: On the Amount of Vitamin B Required During Lactation, *J. Biol. Chem.* 76:263-272 (Jan.) 1928.  
Saxe, Barnett: Dietary Requirements for Fertility and Lactation: XV. The Inefficiency of the Lactating Mother (Mus Norvegicus Albinus) in Secreting Vitamin B in the Milk, and the Relation of This Phenomenon to Infant Mortality (detailed report), *ibid.* 76:685-700 (March) 1928.  
16. Baker, Audrey Z., and Wright, Margaret D.: Vitamin B<sub>1</sub> Content of Human Diets, *Brit. M. J.* 1:599-600 (March 21) 1936. Cowgill.<sup>5</sup>  
17. League of Nations Health Committee, Technical Commission: Report on Physiological Bases of Nutrition, London, 1935.

18. American Public Health Year Book 1934-1935: Human Requirements for Vitamins, pp. 69-72.

19. Dann, Margaret, and Cowgill, G. R.: The Vitamin B Requirement of Female Albino Rats for Maintenance and Growth, *Am. J. Physiol.* 109:27-28 (July) 1934.

20. Morgan, Agnes F., and Barry, Margaret M.: Underweight Children: Increased Growth Secured Through the Use of Wheat Germ, *Am. J. Dis. Child.* 39:935-947 (May) 1930.

underweight children, obtained weight gains from 150 to 170 per cent above the expected gain when they fed two wheat germ rolls at the noon meal; these gains may be contrasted with the gains of the control group, which received white flour rolls and made only from 50 to 71 per cent of the expected gain during the same period. Summerfeldt<sup>21</sup> observed gains of 4.54 and 5.27 pounds (2 and 2.4 Kg.) in ten weeks associated with the administration each week of 4.2 ounces (113 Gm.) of wheat germ and 0.28 ounce (8 Gm.) of yeast, these supplements being incorporated in a special breakfast cereal; the control groups, receiving ordinary cereals, gained only 1.25 and 1.27 pounds (567 and 576 Gm.), respectively. An extension of this study was made by Ross and Summerfeldt,<sup>22</sup> who also used a vitamin B<sub>1</sub> concentrate in addition to the ordinary cereal; their results indicated that the gain with the special cereal was in large measure due to its vitamin B<sub>1</sub> content. The observations of Bartlett<sup>23</sup> and Schlutz<sup>24</sup> of anorexia in children brought to an outpatient clinic suggest that lack of vitamin B<sub>1</sub> is more common than is generally appreciated.

Knott<sup>25</sup> made vitamin B<sub>1</sub> balance studies with eight children from 4 to 7 years of age. "In the . . . study, the intakes which resulted in the highest retentions (regardless of whether retentions were calculated on the basis of food minus urine or food minus total excretion) were found to be six to seven times greater than the minimum requirement for preventing beriberi as determined by means of the formula suggested by Cowgill." Knott also pertinently remarked: "If the intakes resulting in highest retentions may be considered optimum, this wide range between minimum and optimum requirement would seem to explain both the existence of vitamin B deficiency among children and the beneficial results obtained by additions of vitamin B to the diet." This suggested optimum for young children was expressed by Knott as "about 40 Chase-Sherman units per kilogram per day." This would be equal to about 20 international units per kilogram daily. On the basis of the data on body weight and caloric intake recorded by Knott, this figure may be translated to mean from about 20 to 25 international units per hundred calories.

#### CLINICAL FACTORS INFLUENCING THE VITAMIN B<sub>1</sub> REQUIREMENT

*Heightened Metabolism.*—Examination of the formula given previously reveals that the vitamin B<sub>1</sub> requirement is related to the caloric exchange. If the caloric factor is increased, the body weight remaining unchanged, obviously the vitamin intake must be increased. This rule has been tested experimentally both in dogs<sup>26</sup> and in pigeons<sup>27</sup> and found to be cor-

rect. The metabolism factor was increased by administration of thyroid tissue, with consequent production of experimental hyperthyroidism, and in every instance, after the appearance of anorexia, with consequent loss in body weight, the administration of sufficient vitamin B<sub>1</sub> restored the urge to eat and the animals voluntarily ate enough additional food to permit return to the original weight and to secure maintenance at that weight. It may clarify the significance of these results if I point out that the voluntary intake of calories during the experimental hyperthyroidism following administration of vitamin B<sub>1</sub> was practically twice that characteristic of the animals before thyroid was given. In other words, the level of energy exchange induced by the administration of thyroid was approximately double the normal level. In man such a difference would correspond to that seen in a case of extremely overactive thyroid.<sup>28</sup> Although it must be recognized that exophthalmic goiter may not be due simply to an overactive thyroid,<sup>29</sup> it does seem clear that patients suffering from this disease should receive considerably more vitamin B<sub>1</sub> than normal persons. A good practical rule to follow in such cases would seem to be to administer not less than 20 international units of vitamin B<sub>1</sub> per hundred calories of the estimated total daily metabolism. Even this intake would mean using a factor of safety of only 2. If one were to take the measurements of the requirements of pigeons in experimental hyperthyroidism as a guide,<sup>27</sup> a much greater factor of safety would be justified in certain cases. Some of the birds required from two to five times the normal amount of vitamin when given the thyroid. The differences may be related to variation in absorption of material from the alimentary tract and other functions. With the pure vitamin now available, extensive tests of its efficacy in the treatment of exophthalmic goiter should be made; the results of such clinical trials would provide the best basis for the formulation of rules regarding the appropriate dosage of the vitamin.

The effect of an increase in the caloric factor on the vitamin B<sub>1</sub> requirement has also been tested in dogs given forced exercise.<sup>30</sup> In every case, increase in the number of calories representing total metabolism was associated with an increase in the vitamin need.

These confirmations of the relationship between calories and the vitamin B<sub>1</sub> requirement suggest to the clinician the wisdom of increasing sufficiently the vitamin B<sub>1</sub> supply in all cases in which there is a significant increase in the energy metabolism. For example, in the treatment of prolonged fevers by the feeding of so-called high caloric diets, ample supplies of vitamin B<sub>1</sub> should be given along with the "extra" calories. How much vitamin should be given? It is difficult to make any dogmatic general statements in answer to this question. It can be suggested, however, that some estimate be made of the total daily caloric exchange and not less than from 15 to 20 international units of the vitamin per hundred calories be provided. If there is a reason to believe that the patient has been for some time on a low vitamin B<sub>1</sub> regimen, the daily administration of from 5 to 10 mg.<sup>31</sup> of the pure vitamin for about a

21. Summerfeldt, Pearl: The Value of an Increased Supply of Vitamin B<sub>1</sub> and Iron in the Diet of Children, *Am. J. Dis. Child.* 43: 284-290 (Feb.) 1932.

22. Ross, J. R., and Summerfeldt, Pearl: Value of Increased Supply of Vitamin B<sub>1</sub> and Iron in the Diet of Children, II, *Am. J. Dis. Child.* 49: 1185-1188 (May) 1935.

23. Bartlett, W. M.: An Analysis of Anorexia, *Am. J. Dis. Child.* 35: 26-35 (Jan.) 1928.

24. Schlutz, F. W.: The Role of the Diet in the Treatment of Disorders of Older Infants and Children, *Arch. Pediat.* 42: 347-362 (June) 1925.

25. Knott, Elizabeth M.: A Quantitative Study of the Utilization and Retention of Vitamin B by Young Children, *J. Nutrition* 12: 597-611 (Dec.) 1936.

26. Himwich, H. E.; Goldfarb, Walter, and Cowgill, G. R.: Studies in the Physiology of Vitamins: XVII. The Effect of Thyroid Administration upon the Anorexia Characteristic of Lack of Undifferentiated Vitamin B, *Am. J. Physiol.* 99: 689-695 (Feb.) 1932.

27. Cowgill, G. R., and Palmieri, M. L.: Studies in the Physiology of Vitamins: XXII. The Effect of Experimentally Induced Hyperthyroidism on the Vitamin B Requirement of Pigeons, *Am. J. Physiol.* 105: 146-150 (July) 1933.

28. Du Bois, E. F.: Basal Metabolism in Health and Disease, Philadelphia, Lea & Febiger, 1936.

29. For a good discussion of the question of the etiology of exophthalmic goiter see Du Bois<sup>28</sup> p. 348 et seq.

30. Cowgill, G. R.; Rosenberg, H. A., and Rogoff, J.: Studies in the Physiology of Vitamins: XVI. The Effect of Exercise on the Time Required for the Development of the Anorexia Characteristic of Lack of Undifferentiated Vitamin B, *Am. J. Physiol.* 98: 589-594 (Nov.) 1931.

31. This suggestion is based on the report of clinical trials of the pure vitamin made by Goodhart and Jolliffe.<sup>32</sup>

week to build up the tissue reservoir would be wise; afterward the daily intake might well be not less than 15 international units per hundred calories.

*Loss Through Excretory Channels.*—Vitamin B<sub>1</sub> is a water-soluble substance and presumably, therefore, might be eliminated through the kidneys. Many workers have examined the urine for vitamin B<sub>1</sub> content with positive results. There appears to be little question that the amount of vitamin B<sub>1</sub> present in the urine is affected by the intake and the degree of "saturation" of the tissues.<sup>32</sup> It becomes of interest clinically to know whether vigorous diuresis can operate to affect the organism's need for vitamin B<sub>1</sub> by promoting loss of this dietary factor through the kidneys. That this is indeed possible was shown by the experiment which Rosenberg, Rogoff and I<sup>33</sup> performed on dogs. We observed that mere administration daily of large volumes of water sufficient to produce vigorous diuresis resulted in the appearance of anorexia due to vitamin B<sub>1</sub> deficiency in about one-half the time normally required; control experiments showed that such administration of water together with ample vitamin B<sub>1</sub> did not produce the anorexia.

Many clinical conditions are characterized by pronounced diuresis. It seems clear from these experiments on animals that whenever the clinician encounters pronounced diuresis he should take care to see that the patient receives a sufficiently large extra amount of vitamin B<sub>1</sub> to replace that which may be lost through the kidneys. A factor of safety of at least 2 seems to be warranted. This would mean a daily intake of not less than 20 international units per hundred calories for the average patient; still greater amounts would of course provide a greater insurance against shortage of the vitamin due simply to loss through the kidneys.

In the treatment of many clinical conditions it has become standard practice to administer large volumes of fluid. The data at hand from animal experiments suggest the wisdom of administering liberal amounts of vitamin B<sub>1</sub> along with the fluid. The minimum previously suggested based on a factor of safety of 2 might well apply if the patient is an adult; if he is a child the results of Knott<sup>23</sup> should be considered and much larger doses given.

Diarrhea is a common feature of many clinical conditions. It has long been known that vitamin B<sub>1</sub> is present in the stools of animals and that the amount present may vary with the composition of the diet.<sup>34</sup> It is theoretically possible that some of the vitamin present in the intestinal excreta came originally from within the organism, having been excreted through the intestinal wall. Two other possibilities are (1) that this vitamin represents the amount in the diet which failed to be absorbed and (2) that it has been produced by micro-organisms, having been either secreted by them into the surrounding medium or present in the stool as part of their bodies. Study of this problem is obviously of some clinical importance. From the experiments which Dann and I<sup>35</sup> performed on dogs it is clear that the effect of diarrhea is to decrease the absorption of an appreciable fraction of the ingested vitamin. In some instances the daily intake by mouth

had to be increased as much as 70 per cent above the previous "normal" dose. No evidence was obtained suggesting the loss of previously absorbed vitamin by excretion through the intestinal wall. The diarrhea produced experimentally in our dogs would not be classified as severe; it certainly was not comparable to the pronounced diarrhea characteristic of numerous clinical conditions. If the condition we studied could produce a 50 to 70 per cent loss of ingested vitamin, it is clear that the more severe diarrheas must mean even greater losses. Two methods of treatment with vitamin B<sub>1</sub> suggest themselves; namely, administration by mouth of doses of the order of 20 international units per hundred calories or more, with the expectation of considerable loss due to failure of absorption, and parenteral administration of the pure vitamin in doses not less than about 15 units per hundred calories.

*Clinical Trials with Thiamin Chloride.*—Some tests with pure vitamin B<sub>1</sub> have already been reported. It is pertinent to my present theme to discuss these briefly.

Reference has already been made to the paper by Vorhaus, Williams and Waterman.<sup>13</sup> These investigators suggested that adult human beings should receive daily about 1 mg. of the pure vitamin. Goodhart and Jolliffe<sup>36</sup> made a study of the efficacy of various doses of thiamin chloride in the treatment of neuritis in alcohol addicts. They observed that the minimum effective dose was of the order of 4 mg. daily; from 10 to 20 mg. gave much more valuable results, and in some cases as much as 50 mg. had to be given in order to secure improvement. Weiss<sup>37</sup> reported tests indicating the value of the 20 mg. dose and the similar interesting observation that some patients, for unknown reasons, require doses as large as 50 mg. in order to show definite clinical improvement. To many clinicians these may seem to be relatively enormous amounts of the pure vitamin to administer. It is pertinent to point out that the results are similar to those obtained with experimental animals. For example, the minimum amount of vitamin B<sub>1</sub> required to cure a pigeon and keep it free from the critical symptoms of advanced B<sub>1</sub> deficiency for at least three days is from three to five times the daily minimum for maintenance of weight. In order to permit rapid restoration to normal body weight and well being, the bird must receive from ten to twenty or more times the daily minimum for maintenance of weight. Assuming that such a relationship holds for man and taking for calculation the daily requirement of the average man as suggested by Vorhaus and his associates,<sup>13</sup> namely, 1 mg. of thiamin chloride, one should expect precisely the results reported by Goodhart and Jolliffe<sup>36</sup> and by Weiss.<sup>37</sup>

In view of what is known about the ready excretion of vitamin B<sub>1</sub> through the kidneys, it seems to me that the clinician must for the present necessarily steer between the one extreme of giving such small daily doses that the patient can improve only very slowly and the other extreme of giving so much (particularly by the parenteral route) that a large part is lost through the kidneys before the tissues can properly absorb and store it. Until studies have been made of the capacity of both the deficient and the normal organism to store vitamin B<sub>1</sub> administered in various ways under properly controlled experimental conditions, one cannot say what

32. Papers dealing with this question are cited by Harris and Leong.<sup>11</sup>  
33. Cowgill, G. R.; Rosenberg, H. A., and Rogoff, J.: Studies in the Physiology of Vitamins: XIV. The Effect of Administration of Large Amounts of Water on the Time Required for Development of the Anorexia Characteristic of a Deficiency of the Vitamin B Complex, *Am. J. Physiol.* 95: 537-541 (Dec.) 1930.

34. For a detailed discussion of this point, with citations of literature, see "The Physiology of Vitamin B," this series.

35. Dann, Margaret, and Cowgill, G. R.: The Influence of Diarrhea on the Vitamin B Requirement, *Arch. Int. Med.*, to be published.

36. Goodhart, R. S., and Jolliffe, Norman: Observations on the Effects of Vitamin B (B<sub>1</sub>) Therapy on the Polyneuritis of Alcohol Addicts, *J. A. M. A.* 110: 414 (Feb. 5) 1938.

37. Weiss, Soma: Personal communication to the author.



are the largest effective yet economical doses of the pure vitamin to use in clinical work. As soon as chemical methods have been perfected, permitting prompt analysis of the urine and the blood for their vitamin B<sub>1</sub> content, these important studies can and should be performed. In view of the activity on this problem in many laboratories, no doubt one may confidently expect soon to have the desired chemical tools for this work. In addition to yielding the information desired with respect to the best doses to use clinically, such studies should also lead to a clinical function test by which the clinician may not only confirm his impression that the patient is suffering from serious vitamin B<sub>1</sub> deficiency but may even detect moderate deficiency, which might be called "vitamin B<sub>1</sub> subnutrition." It is my belief that such researches will reveal vitamin B<sub>1</sub> subnutrition to be sufficiently common to warrant serious attention on the part not only of the practicing clinician but of all students of preventive medicine, public health and nutrition. The condition, if found, could be corrected readily by improvement of the diet.

### *Council on Physical Therapy*

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF  
THE FOLLOWING ARTICLE.

HOWARD A. CARTER, Secretary.

#### PHYSICAL THERAPY IN THE TREATMENT OF FRACTURES

FRANK D. DICKSON, M.D.  
KANSAS CITY, MO.

Widespread mechanization of industry, the increase in the employment of machinery in agriculture and the tremendous growth in the use of the automobile have completely changed the fracture picture in the United States in recent years. This change has been in two respects: (1) There has been a great increase in the number of fractures which occur annually; (2) there has been a marked increase in the number of serious fractures. The increase in the number of fractures is traceable to the greater opportunity for suffering trauma likely to cause fracture; the increase in the number of severe fractures is ascribable to the severe damage which results from the type of violence which machinery inflicts. As a consequence of these factors, the fracture problem today must be considered as having two aspects: a medical aspect which includes the recognition, reduction and immobilization of fractures, and an economic aspect which includes the length of time consumed in recovery, as measured by the period over which the individual is disabled or restricted in activity, and the final result, as measured by permanent residual disability. The effectiveness of fracture treatment today, then, cannot be based solely on securing union of the fractured bone or bones, for the rapidity with which the individual is returned to work and the extent to which function is restored must also be taken into consideration. Formerly, treatment of a fracture consisted in applying a splint and leaving it to nature to complete the cure; today, when we are dealing with more serious and more complicated fractures than in the past, a successful end result is dependent not only on adequate immediate treatment of the fracture but also on carefully planned and supervised after-care. Both of these

requisites are necessary to meet the demands which the management of fractures today make on those who aspire to treat them and secure end results which will meet the critical judgment of public opinion and compensation commissions.

As this contribution deals with physical therapy as applied to fracture treatment, the immediate treatment of fractures may be briefly dismissed. It should suffice to say that at the present time it is generally conceded that a fracture should be treated as a surgical emergency and reduction under an anesthetic, local or general, carried out at the earliest possible moment and adequate fixation immediately applied. The reasons for this position are quite evident: immediate reduction minimizes local trauma and so cuts down the amount of traumatic exudate and infiltrate which accompanies any injury; it reduces to a minimum the undesirable muscle spasm always present; it favors the early reestablishment of blood and lymph circulation so important to healing. Following reduction, adequate splinting is necessary to insure continued maintenance of reduction and preservation of the conditions which make for rapid and complete healing.

The proper after-care of a fracture in the main consists of maintaining fixation of the fractured bone or bones until union has occurred, the early restoration of normal circulatory efficiency in the involved region and the building up of muscle tone and power so that normal use may be resumed at the earliest possible moment. Physical therapy, properly and intelligently employed, can be of inestimable service in this period of after-care in hastening recovery, but it is equally true that if physical therapy is used as a part of a routine without a true understanding of its purpose it may be a detriment rather than a help and even actually prolong the period of convalescence by inculcating in the patient a belief that recovery is to be attained by physical therapy alone and without effort on his part.

In order that physical therapy may be intelligently used in the treatment of fractures, it is necessary that its purposes and aims be clearly defined and recognized. Briefly stated, these are (1) promoting the early absorption of hemorrhage and traumatic exudate; (2) relaxation of muscle spasm to relieve pain and discomfort; (3) the reestablishment of normal circulatory conditions in the affected extremity, blood stream and lymphatics, which insures a more rapid and complete healing of the fracture; (4) building up in the muscles of the extremity that tone and flexibility so necessary to normal use. These effects, as has been emphasized by Clay Ray Murray,<sup>1</sup> are brought about by physical agents acting on the neuromuscular and neurovascular reflex mechanisms and through the stimulation of muscles by physical means or voluntary action.

Broadly speaking, there are four basic forms of physical therapy which may be employed in the treatment of fractures to accomplish the purposes catalogued; they are heat, massage, exercise and muscle stimulation. The first two of these secure their effect by bringing about muscular and vascular relaxation; the third and fourth are of chief importance in promoting venous and lymphatic flow and preparing the muscles to resume their normal active role as soon as use may be safely permitted.

1. Murray, C. R.: Surg., Gynec. & Obst. 56:479 (Feb., No. 2A) 1933.

## HEAT

Heat as a physical agent may be applied in a number of ways such as by a therapeutic lamp, diathermy, electric pad and as radiant heat by the use of ordinary light bulbs set up in a cradle. Heat, to bring about the best results, should be employed at low intensity and over a considerable period. The most important effects secured from heat are analgesia, relaxation of muscles, relief of spasm and vasodilatation, and the longer these effects are maintained within reason the more productive they are. Heat of high intensity which produces a marked erythema cannot be tolerated long and is decidedly less beneficial.

## MASSAGE

Massage has been described as the scientific manipulation of the soft tissues of the living body for therapeutic purposes. Massage is effective when applied by a trained person in a scientific manner; there is a vast difference between the skilled manipulation of a trained physical therapist and the rough and ready methods of the Turkish bath attendant or gymnasium rubber. Properly given, massage stimulates the nerve endings and activates sensory impulses of a wide variety which are important in relaxing muscular and vascular spasm and in relieving pain and discomfort. It also promotes the absorption of hemorrhage and exudate by improving blood and lymphatic circulation in a damaged extremity. The type of massage most useful in the treatment of fractures is light stroking massage; the movement should be slow, even, steady and always in the same direction; that is, lengthwise of the part in the direction of venous circulation. It should be remembered that massage employed to get rid of hemorrhage and exudate and reduce swelling acts by bringing about improved circulatory conditions and does not rub the exudate out of the part by pressure and force. Although all authorities do not agree, it is my opinion that light and very gentle kneading may also be used to advantage in fracture cases; such movements stimulate the intramuscular circulation and improve muscle tone.

## MUSCLE STIMULATION

Muscle contractions may be produced by voluntary effort or by electrical stimulation. Voluntary contraction of muscle groups is incomparably superior to any form of artificial stimulation. Unfortunately, however, it is possible to utilize voluntary muscular activity in the treatment of fractures only to a limited extent until union is sufficiently strong. A very useful amount of voluntary contraction can usually safely be permitted and encouraged in most fractures earlier than is generally recognized under proper conditions of immobilization. Such limited voluntary use is made possible by employing fixation (traction or hinged splints) which holds the fractured bone or bones securely but permits the guarded use of adjacent joints, by the use of molded plaster splints instead of circular plaster dressings and also by having the patient "set" the muscles of the injured extremity a number of times each day; such "setting" of the muscles can be carried out even when the limb is completely encased in a plaster dressing. The extent to which muscle tone and flexibility can be maintained by carefully supervised daily exercise under proper conditions of fixation is often surprising.

Muscle stimulation by electrical stimulation, while not as satisfactory as active exercise, is nevertheless a useful

therapeutic aid for maintaining muscle tone. Pemberton<sup>2</sup> has shown that whereas lactic acid is produced by contraction of muscles following volitional effort it does not arise at least in significant amounts as the result of stimulation of the muscle by faradic current. It is therefore probable that no form of electrical stimulation can be expected to produce the same type of muscle contraction as that which results from voluntary use. To avoid painful contraction some form of sinusoidal current may be used. The Council on Physical Therapy will furnish a design for making a faradic sinusoidal coil. This coil produces a sinusoidal current which will give graduated muscular contraction as described by Bristow and Smart. The value of these contractions is primarily the increase in circulation in the muscle. When electrical stimulation is utilized to bring about muscle contraction, it should be painless and not cause muscle spasm; for, when pain and spasm are produced, harm rather than good results.

Of equal importance with the measures used for applying physical therapy is their use at the proper time. Too often physical therapy is looked on as the final step in fracture treatment, as an agent to be used to restore function to atrophied muscles and stiffened joints which have been rigidly immobilized for weeks in a fixation dressing. While occasionally fractures are encountered in which the application of physical therapy is impossible until union is complete, to wait so long in the vast majority is losing valuable time and unduly prolonging convalescence. Theoretically, physical therapy may be used advantageously in all three stages into which fracture treatment is divided, the reduction period, the postreduction period, and in after-treatment.

## THE REDUCTION PERIOD

While unquestionably massage and elevation may be used with advantage to reduce swelling and quiet muscle spasm preceding reduction and the application of definitive splinting, to carry out such measures in a routine way demands a special setup and personnel which is rarely available. Practically, then, physical therapy can play but a minor role in the reduction period. However, when for any reason it is impossible to proceed with the immediate reduction of a fracture, even if the delay is but a few hours, heat and gentle massage may be used to advantage. When fractures are accompanied by severe trauma to the surrounding soft parts with extensive hemorrhage, and reduction, open or closed, must be delayed for several days, heat and massage may be used with considerable benefit to improve the condition of the soft parts and permit the application of definitive treatment much sooner than would otherwise be possible.

## THE POSTREDUCTION PERIOD

In the postreduction period physical therapy should assume a very important role in fracture treatment, but unfortunately it is during this period that it is most neglected. It is in the immediate postreduction period that exudate and hemorrhage which will become organized into scar tissue about the muscles, tendons, vessels and nerves and interfere with muscle action, normal circulation and joint movement can largely be removed by restoring as early as possible normal circulatory efficiency to the part. The stiffness, soreness and impaired function following a fracture are due in large part to

2. Handbook of Physical Therapy, page 73.

such scar tissue and its removal or at least reduction to a minimum lessens the discomfort incident to restoring function and materially shortens the period of convalescence. Furthermore, in the light of recent investigations, clinical and experimental, it seems clearly established that delayed union and nonunion are in the main traceable to interference with circulation at the fracture site so that early restoration of circulatory efficiency is our best safeguard against these catastrophes.

It is quite true that the application of physical therapy at this time is often difficult because the part is encased in a fixation dressing, but by the use in both bed and ambulatory cases of traction, which allows ready access to the part for physical therapy, through apertures in plaster dressings, by the use of hinged splints which allow movement in adjacent joints without disturbance of the fracture site, by the use of open splinting and by daily "setting" of the muscles, it is usually possible in most fractures to use heat, massage and muscle contraction throughout the period of fixation to the great advantage of the patient. So-called open splinting has in recent years been used more and more in the fixation of fractures; this permits the employment of physical therapy to a very satisfactory extent. By open splinting is meant using anterior or posterior or lateral molded plaster splints to replace circular plaster dressings when possible; as, for example, in Colles fractures, fracture of the patella and fractures of the ankle. Such splints afford ample exposure for physical therapy without disturbing the fracture. If a circular plaster dressing is used, it may be bivalved and the halves removed alternately for the application of physical therapy.

In addition to "setting" muscles in this postreduction period, active muscle contraction may be encouraged in several ways. Even with the forearm and arm encased in a plaster cast, if the fingers are free, the patient by squeezing and relaxing the grip on a rubber sponge can exercise the forearm and arm muscles extensively. Under the same conditions the shoulder and arm muscles will retain a large part of their tone and power if the shoulder joint is exercised regularly each day instead of holding the arm continually suspended and immovable in a sling. In Colles fracture, too often the elbow and shoulder joints are not moved and exercised, with the result that atrophy of the arm and shoulder muscles and limitation of movement in the elbow and shoulder joints prolong recovery while these avoidable conditions are being corrected. In leg fractures, systematic knee and hip exercises should be carried out each day to maintain muscle tone and strength in the thigh and hip muscles so that the extremity will be better prepared to function when weight bearing is permitted. In these ways and others which naturally suggest themselves, muscles and joints may be kept active and the general strength of an extremity maintained in a state of reasonable efficiency.

#### THE PERIOD OF AFTER-TREATMENT

It is in the period of after-care that physical therapy is most generally used in fracture treatment. It is unfortunate that it is so frequently improperly used. The objective sought for in the after-care of a fracture is the restoration of normal use to the injured part after union of the fracture is complete and splints and restraints have been removed. The restoration of the ability to use the damaged limb normally or at least

satisfactorily is possible only when muscles are active and joints movable. Muscle tone, flexibility and power can be built up only by progressively increasing active use of the muscles by the patient; a joint stiff or with limited motion can become movable and reasonably useful only through the establishment of muscular control of the joint by the patient. It should be clearly understood that the range of passive movement which can be obtained in a joint is no criterion of its usability, since only that degree of movement which the patient can control is usable. Furthermore, until voluntary control of joint motion is established, ankylosis or serious impairment of the range of joint motion of a more or less permanent character is possible. The role of physical therapy in the after-treatment of fractures may be stated then to be helping the patient to regain voluntary use of the muscles and voluntary control of impaired joints of the injured extremity. Heat, massage and muscle stimulation can reduce swelling, can decrease pain, soreness and stiffness in weak and degenerated muscles, can improve vascular and lymphatic circulation, can stimulate neuromuscular and neurovascular impulses, can in brief make it easier for the patient to use the impaired part and build up voluntary control, but they cannot make him well. The patient, in the last analysis, is master of his fate, and physical therapy is but the tool which enables him to carve out his recovery with the least discomfort, the greatest speed and to the fullest extent.

In seeking to help a patient to regain voluntary control of the muscles and joints following a fracture, heat and massage should be used to loosen up and render more pliable muscles and so reduce the stiffness and pain incident to attempts at movement. The movements which are used should be designed to bring about normal action of the joint in the most natural manner. Having the patient go through the motions of brushing the hair in elbow fractures, driving nails with a light hammer in fractures of the wrist, turning a door handle in fractures of the forearm, and reaching for objects placed at a gradually increased height in shoulder fractures illustrate the methods which may be used to encourage the patient to use the extremity in a normal manner.

While emphasis has been laid on the basic forms of physical therapy, heat, massage, and muscle stimulation, it should be stated that there are varieties of these basic forms which may be used with satisfactory effect. Contrast hot and cold baths, the whirlpool bath and the hot paraffin bath may be mentioned as examples. The use of balanced weights on pulleys and various devices which encourage the patient to use joints with a restricted range of movement are most helpful. Also many types of apparatus have been devised which are helpful and enable treatment to be given efficiently and comfortably. Too often such apparatus is expensive and complicated and its use is but vaguely understood, so that it is employed according to directions given in a printed pamphlet which accompanies it from the manufacturer, who rarely underestimates what it will do or the number of conditions it will benefit. By all means let us be ready to take advantage of any advances and improvements which science offers, but let us demand that the criterion of the therapeutic effect expected from any piece of apparatus be a scientific and medically correct one and not an empiric one determined by its maker. Helpful as apparatus may be, it

does not eliminate the element of judgment in how and when it should be used, nor can we blindly accept the statement of the maker as to its therapeutic effect. The accepted list of the Council on Physical Therapy of the American Medical Association is a reliable guide to apparatus which performs as claimed.

#### OCCUPATIONAL THERAPY

Any discussion of physical therapy in the treatment of fractures would be incomplete without mention of occupational therapy. Occupational therapy is a method of rehabilitation which is most useful in the treatment of fracture patients.

Occupational therapy is chiefly valuable because it supplies a real incentive for the patient to use the impaired part. A definite task is given him to perform and in spite of himself he becomes interested in completing it, with the result that he is inspired to renewed effort and unconsciously develops the attitude of mind which is necessary for recovery. Unfortunately, this form of physical therapy requires trained attendants and some apparatus so that its use is largely restricted to centers where these requisites are available; ingenuity, however, may work out simple tasks which may replace apparatus for rehabilitation training. Light carpentry, which requires the use of hammer, plane, saw and sandpaper, is available everywhere and is a useful type of occupational therapy for restoring function in the upper extremity. Gardening, painting and a variety of other simple occupational pathways may be utilized to improve joint motion, increase muscle strength and control, and above all build up the patient's morale and help him progress from the passive role of a recipient of physical therapy to an active role of one who is giving himself physical therapy. Occupational therapy is a very useful way of overcoming the subconscious resistance of the patient to normal use of an injured part for fear he will suffer a relapse. It is often a useful bridge over the hiatus between return of use and return to normal life and activity.

#### AMOUNT TO BE USED

Finally, some mention should be made of the amount of physical therapy which may be used. There is but one reliable guide as to whether physical therapy is being given properly and that is the reaction of the patient. Physical measures may be used up to the point of pain tolerance provided the painful reaction subsides within an hour or two. Physical therapy which produces painful reaction and muscle spasm that persists until the next treatment indicate too forceful or too prolonged treatment and both amount and duration must be reduced; persistence can lead only to resistance on the part of the patient, slowing up of recovery, and a disappointing result.

#### CONCLUSION

In the treatment of fractures physical therapy has a most important role. Used intelligently in the post-reduction period it will reduce scar tissue, infiltration of muscles, tendons and joints, maintain a satisfactory state of the circulatory apparatus and greatly reduce the period of after-treatment. Properly employed in the after-treatment it will help the patient to do his part, which is building up that voluntary active use of the impaired extremity which alone can restore function, hasten his recovery and complete the cure.

## Council on Foods

### ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION AND WILL BE LISTED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED.

FRANKLIN C. BING, Secretary.

- (1) NUTRADIET APRICOTS PACKED IN WATER
- (2) NUTRADIET PEELED APRICOTS PACKED IN WATER

*Distributor.*—The Nutradiet Company, a subsidiary of S & W Fine Foods, Inc., San Francisco.

*Description.*—Canned peeled and unpeeled apricots packed in water without added sugar.

*Manufacture.*—Tree-ripened apricots are inspected, washed and mechanically graded. The pits and blemishes are removed by hand, and fruit for the 8 ounce pack is cut and is peeled by submersion in a hot solution of caustic soda. The fruit is packed in cans and water is added. The cans are exhausted in the presence of steam, sealed and processed in boiling water.

*Analyses* (submitted by manufacturer).—(1) Moisture 90.4%, total solids 9.6%, ash 0.43%, fat (ether extract) 0.07%, protein (N  $\times$  6.25) 0.5%, crude fiber 0.3%, carbohydrates other than crude fiber (by difference) 7.6%, total acidity 0.7%. (2) Moisture 92.2%, total solids 7.8%, ash 0.38%, fat (ether extract) 0.06%, protein (N  $\times$  6.25) 0.4%, crude fiber 0.3%, carbohydrates other than crude fiber (by difference) 6.0%, total acidity 0.7%.

*Calories.*—(1) 0.33 per gram; 9 per ounce.

(2) 0.26 per gram; 7 per ounce.

*Claims of Manufacturer.*—For diets in which sweetened fruit is proscribed.

### CELLU BRAND CARROT JUICE

*Distributor.*—Chicago Dietetic Supply House, Inc., Chicago.

*Description.*—Juice expressed from carrots packed without added water, salt or sugar.

*Manufacture.*—Selected mature carrots are washed, cooked, peeled, inspected, trimmed by hand, rinsed in cold water, ground to a fine pulp and pressed through a cloth. The resulting juice is strained, and filled into cans. The cans are heated, sealed and heat processed.

*Analysis* (submitted by manufacturer).—Moisture 93.2%, total solids 6.8%, ash 0.3%, fat (ether extract) 0.2%, protein (N  $\times$  6.25) 0.3%, reducing sugars as dextrose 1.6%, starch 2.6%, crude fiber 0.03%, carbohydrates other than crude fiber (by difference) 6.0%.

*Calories.*—0.27 per gram; 8 per ounce.

### MRS. PALEY'S BABY FOOD— STRAINED SQUASH

*Manufacturer.*—Paley-Sachs Food Company, Houston, Texas.

*Description.*—Canned, sieved squash, slightly seasoned with salt.

*Manufacture.*—Yellow Crook Neck squash is inspected, washed, scrubbed with soft brushes and trimmed. The unpeeled squash is cooked under pressure without water until tender and strained in an atmosphere of steam. Salt is added and glass jars are filled, vacuum sealed and heat processed. No spray is used during the cultivation of the squash.

*Analysis* (submitted by manufacturer).—Moisture 90.5%, total solids 9.5%, ash 0.8%, fat (ether extract) 0.4%, protein (N  $\times$  6.25) 1.4%, reducing sugars as dextrose 5.2%, sucrose none, crude fiber 0.5%, carbohydrates other than crude fiber (by difference) 6.4%, iron (Fe) 0.0015%, phosphoric acid ( $P_2O_5$ ) 0.094%, phosphorus (P) calculated 0.041%, calcium ( $CaO$ ) 0.029%, calcium (Ca) calculated 0.021%.

*Calories.*—0.35 per gram; 10 per ounce.

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, SEPTEMBER 10, 1938

## THE USES OF ANIMAL EXPERIMENTATION

The conservative attitude of the medical profession has both good and bad aspects—good when it refuses the use of untried drugs and unproved methods of therapy, bad when it permits medical progress to be attacked and maligned without defending itself. This attitude permits the public to be deceived concerning medical progress and sometimes causes the sick to seek relief from undependable sources which promise help. THE JOURNAL, by its continual exposure of "quack" medicines and falsely claimed "cures," has for many years done a great service to the public as a whole. More difficult to combat than such deliberately fraudulent claims, however, is the destructive work of the small but vociferous group opposed to experiments on animals. Their "crusaders" each year spend large sums of money in an attempt to stop all experimental work in the biologic sciences. In spite of the proved facts concerning the whole science of bacteriology, learned almost entirely through animal investigation, they claim that no good has come through man's utilization of animals in laboratory study.

The antivivisectionists refuse to recognize the great and continuous fall of the death rate in the infectious diseases, the remarkable extension of life<sup>1</sup> since the discovery of bacteriology and the beneficent progress of modern surgery as related to animal investigation. True, if their children acquire diphtheria they may use antitoxin, and if they develop appendicitis they may seek out a surgeon, but the relation of these therapeutic agents to research on animals is disclaimed. With these people argument and elucidation of the facts serve little purpose, for they twist the truth, misquote medical men now dead, and play on sentiment, not reason.

At present opponents of experiments on animals are proposing and advocating the so-called Humane Dog Pound Initiative in California, which will be voted on by a referendum in November. This cleverly constructed piece of legislation is apparently aimed against

unnecessary suffering of dogs; actually it will make further animal investigation in the state of California difficult and hopelessly expensive. Such legislation, if passed, will seriously hamper further laboratory investigation in every state. Proper education of the public in (1) the methods of animal investigation and (2) the advantages that have accrued to the people from animal investigation should do much to bring about its defeat.

The articles now appearing in the *Country Gentleman* written by Paul de Kruif are a splendid assistance in this important task. In these articles de Kruif has exposed not only how much man has benefited but how much the animals themselves have benefited from laboratory investigation. The tremendous decrease in Texas fever of cattle, hog cholera, bovine tuberculosis and foot and mouth disease are striking examples of how the use of a few animals in laboratory investigation has lessened or completely done away with the suffering of hundreds of thousands of animals. De Kruif has sharply emphasized this advantage by stating the tremendous financial saving to our farmers. Naturally man cannot control human disease as completely as animal disease. The article in the September issue of the *Country Gentleman* depicts the possibilities for comfort and longevity which may follow the acquisition of exact knowledge through animal investigation. In succeeding issues the advantages which have accrued to man through similar animal experimentation will be made public.

This service to the continuance of medical research deserves recognition by the medical profession. Every physician may aid by calling the attention of patients and friends to these masterful statements.

## ANALYSIS OF FACTORS IN THE DECLINE OF TUBERCULOSIS

The mortality from tuberculosis has declined from about 30 per 10,000 of population to 5 or 6 in the last fifty years. What are some of the possible factors which have brought about this decline? In an analysis Wolff<sup>1</sup> distinguishes (1) a specific factor, (2) a hereditary factor, (3) a social factor, (4) a population factor and (5) the medical prophylactic factor.

The tubercle bacillus probably comes in contact with the entire population in urban areas; hence the bacillus alone is not sufficient to produce clinical illness, still less an epidemic. The decrease in mortality cannot be attributed to a natural protective inoculation, for, as Neufeld of the Robert Koch Institute says, natural inoculation with tuberculosis produces a limited immunity which is only relative and rapidly diminishes. The slow course of the disease clearly shows that the infection does not carry with it specific immunity. The relative immunity of which Neufeld spoke may be

1. Life expectancy in the United States increased from 46 to 61 from 1912 to 1937.

1. Wolff, George: Tuberculosis and Civilization: Part II. Interpretation of the Etiological Factors in the Epidemiology of Tuberculosis. *Human Biology* 10: 251 (May) 1938.



broken when resistance is reduced, as shown by the rise in the mortality rate during the World War.

A constitutional factor does play a part in tuberculosis mortality. In the same family under almost identical environment one may see some children succumb to tuberculosis while others do not. Inherited factors produce a constitution that plays an important part in the pathology of most diseases. A precise differentiation of what qualities predispose to tuberculosis or what kind of constitution affords protection against it has not been determined. The figures in Pearl's investigation show that, where one or both parents were actively tuberculous, virtually three fourths of the nontuberculous offspring have been in just as close contact with open cases as their brothers who acquired the disease. Some writers have revived the theory of selection by mortality, a view which Pearson used long ago to explain the decline in tuberculosis mortality. Natural selection by the early death of the tuberculous does not sufficiently explain the epidemic course. The reproductive powers of the tuberculous in the majority of cases continue nearly until death or the usual age and thus they maintain their stock.

Among German writers, Fritz Lenz came to the conclusion that blond types are less affected by tuberculosis than brunets. Lenz writes that tuberculosis has been a factor in producing in northern Europe, which is poor in sunlight, the blond clear-skinned type, while in the southern part, where the blond type is more susceptible to malaria, there has been a change in favor of brunets. Thus Lenz explains the frequency of blond Jews in central Europe by the selective action of tuberculosis in favor of blonds. Wolff believes that more exact knowledge of the epidemiologic data suggests that the lower mortality of Jews from tuberculosis is correlated with economic factors.

The social factor is probably the most important factor in the downward trend of tuberculosis. It is so important and complex that Wolff divides it into elements. The factor of economic well being can be analyzed into such parts as housing, occupation, nutrition, size of family and hygienic education, all of which are related. National nutrition is of great importance. The mass experiments in nutrition provided by the World War speak eloquently on this point. As early as 1915 in England and Germany the tuberculosis mortality rate was higher than in 1914. If nutrition has the main role in increasing tuberculosis mortality during the World War, improvement in nutrition over the last fifty years has had a part in the decline.

Various investigators have shown that occupation plays a part in tuberculosis mortality. In the standardized mortality figures in an occupational study among males in England and Wales during 1921-1923, the tuberculosis mortality for agricultural workers was found to be 96, for brewers 115, for bricklayers 127, for cotton spinners 175, for shoe factory workers 298 and for tobacco factory workers 326. Shoemakers are

not exposed to any particular hazard and yet they show a high mortality. That is because persons enter this occupation who are physically unfit for other occupations. For the same reason bricklayers have a relatively favorable mortality. Bricklaying is not an occupation for men of poor physique. In spite of the risks of industrial work, the average tuberculosis mortality in industrialized states is lower than it is in the agricultural states, where there is a lower standard of hygiene and of living. The better social, economic and hygienic conditions in the industrial states, together with better medical treatment, probably is the basis of this difference. Industrialization has brought with it not only dust and industrial diseases but also an elevation of the national well being which much overcompensates the disadvantages of industrial work.

Closely connected with industrialization has been a biologic change in the industrialized states reflected in a decline in the birth rate. With a smaller family the average income per head increases whether the wages are increased or not. The decline in birth rate necessarily effects a change in the structure of the family. Reduction in size of the family increases the proportion of the family budget available to each member. There is even a direct influence on the possibility of infection, for the virus in a smaller family has a smaller field of operation.

In a study of the mortality of young adults from tuberculosis, Bradford Hill concluded that the level of mortality in the different rural districts was influenced by the movement of the population, particularly internal migration. The urban districts which have attracted young people showed a decrease in mortality, while the districts that have lost population tended toward increased mortality in young adults. The success of medical treatment and medical care of people generally forms a part of the social environment, and practice of medicine in the field of tuberculosis ranks high.

Thus a critical examination of statistics shows that of all the factors influencing the epidemic march of tuberculosis the decisive factors are the socio-economic and sociobiologic, combined with changes in the standard of living brought about by industrialization. The tuberculosis mortality rate has fallen greatly because particular strata of the working classes are now as well to do as or even better off than many of the middle classes. Compared with these the natural environment—climate, sunshine, soil—is of minor importance.

A national campaign against tuberculosis, in Wolff's opinion, should have as its goal further improvement of the social environment so that persons infected by tuberculosis will not become victims of the disease. It should never be the task of the physician to breed human beings refractory to tuberculosis, ignoring all other mental and physical hereditary qualities. Further extension of the process that has been at work in the last fifty years may yet bring tuberculosis to the vanishing point.

### ETHICS OF AMERICAN BAR ASSOCIATION GOVERNING SIMULTANEOUS PRACTICE OF MEDICINE AND LAW

The Committee on Professional Ethics of the American Bar Association in a recent opinion<sup>1</sup> holds that a person legally authorized to practice law and medicine may practice the two simultaneously without violating the canons of professional ethics of that association but that he must recognize in every case the particular capacity in which he is acting. In a previous opinion<sup>2</sup> the committee held unethical a statement on a lawyer's letterhead announcing that he was a specialist in "medical-legal" law.

In its recent opinion the committee says that a person practicing law and medicine simultaneously offends against the canons of professional ethics if in correspondence connected with his practice of either profession he uses a letterhead that contains the two appellations "attorney at law" and "doctor of medicine" or shows that he has the degrees of LL.B. and M.D. or contains the phrase "medical jurisprudence." In fact, in the opinion of the committee a lawyer cannot ethically place on his professional letterhead any indication of any degree conferred on him. A lawyer-physician who is establishing offices for the practice of law and medicine jointly cannot, in the opinion of the committee, without violating the canons of professional legal ethics, send out announcements of the establishment of such offices at a specified address for the practice of both law and medicine. A person practicing law and medicine coincidentally cannot ethically send announcements even to members of the legal profession stating that he is specializing in medical jurisprudence unless he is offering that specialized service directly and exclusively to lawyers. A lawyer engaged in "a specialized legal service" directly and exclusively to other lawyers may ethically publish in legal periodicals and like publications a brief dignified notice of that fact, in language indicating that it is addressed to lawyers alone, when such a notice will afford convenient and beneficial information to lawyers desiring to obtain such services. The Committee on Professional Ethics, however, refrains from expressing any opinion as to whether a lawyer acting as counsel to other lawyers in matters involving a knowledge of medical jurisprudence is or is not "rendering a specialized legal service" within the meaning of this rule. It is not inconsistent with the canons of legal ethics, in the opinion of the committee, for a lawyer who is opening offices for practice as a lawyer and as a physician simultaneously, to send separate announcements of the opening of such offices to those with whom he has previously established personal relations within the meaning of the canons of legal ethics, but the announcement of the opening of his law office and the announcement of his opening of an office

for the practice of medicine, if sent to the same person, should not be sent under the same cover.

The opinion rendered in the present instance was rendered in response to a request from a committee on professional ethics of a state bar association and pursuant to authority vested in the Committee on Professional Ethics of the American Bar Association to express its opinion concerning proper professional conduct when consulted by any member of the bar or by any officer or committee of a state or local bar association. The committee is authorized furthermore to consider on its own motion or on a complaint information as to the professional conduct of any member of the association and, after a hearing, to recommend to the Board of Governors the public or private censure, suspension or expulsion of an offending member. The board may censure, suspend or expel a member for cause. The published opinion of the committee in the present instance does not show whether disciplinary action has been taken or is contemplated in any specific case because of the misconduct of any member of the association.

### Current Comment

#### NEUROSES AND SOCIO-ECONOMIC CONDITION

The effect of social conditions on the incidence of disease is well recognized. In a recent contribution Neustatter<sup>1</sup> reports three groups of fifty families studied to determine the role of socio-economic circumstances on the production of neuroses. The first group comprised poor working-class families in southeast London, picked at random. The second was chosen from the parents of children attending the council schools in southeast London but composed principally of small professional and clerical workers with modest incomes, and the third was a group of "well-to-do" families from a northwest London suburb of middle class and economically more comfortable than the other groups. The information was obtained from questionnaires directed to parents and from personal interview. The specific purpose was to determine whether there was any relationship between the socio-economic status of the parents and the frequency of various neuroses, including night terrors, depression, unsociability and aggressiveness. Although the dangers of the questionnaire method were fully recognized, the results appear to be significant. A clearcut physical difference between the two groups of poorer children and the "well-to-do" was noted: one third of the children in the poorer class showed "poor physique," and pallor and tired and lined facies were found practically only in the poorest group. In the poor group of fifty families, twenty were badly housed and thirty had insufficient money for food. Only 20 per cent of this group however were nervous and 56 per cent were not, as compared with 30 per cent nervous and 36 per cent not in the fifty "well-to-do"

1. Opinion 183, May 10, 1938, American Bar Association Journal 24: 673 (Aug.) 1938.

2. Opinion 159, May 5, 1936, American Bar Association Journal 22: 503 (July) 1936.

1. Neustatter, W. L.: The Effect of Poor Social Conditions in the Production of Neuroses, *Lancet* 1: 1436 (June 25) 1938.

families. It was concluded therefore that poor social conditions are not in themselves a direct determinant of nervousness in children. Furthermore, case histories were obtained showing that even extremely bad social conditions leave children unaffected psychologically provided the psychology of the home situation is good. Social circumstances do at times affect children through the parents but surprisingly little, and then generally when the parents are already nervously predisposed. A statistically significant relationship between the presence of a worrying disposition in the parents and the presence of anxiety and a tendency to worry in the children irrespective of class was demonstrated. Poverty, therefore, seems to decrease rather than to increase the incidence of many neuroses.

### ACCIDENT STUDIES IN KANSAS

As lives have been saved from disease they have been sacrificed to accidents. The modern safety movement is an answer to the challenge of accidental death and injury. Among the most comprehensive studies of accidents have been those carried out and published annually by the board of health of the state of Kansas.<sup>1</sup> The Kansas State Board of Health has prepared a special form for reporting accidental deaths. This work was begun in 1932. The current report for 1937 is the sixth annual publication of the data procured through these special reports. The reports are procured with the assistance of sheriffs, police officers, physicians, coroners and others. The resulting data are as complete a record of accidental deaths as is available on a state-wide basis anywhere. Accidents ranked fifth in causes of death in Kansas, preceded only by heart disease, cancer, cerebral hemorrhage and chronic nephritis. In 1934 they ranked fourth in importance but for the last three years have ranked fifth, with a total of 1,492 accidental deaths reported in 1937, the lowest number since 1932. The death rates per hundred thousand of population have varied from 54.6 in 1932, the first year of the intensive study, to a high of 68.3 in 1936 and a rate of 57.3 in 1937. The lowest rate during the six years was 56.1, in 1933. The decline of 339 during 1936 was accounted for by a reduction of ninety-five in automobile deaths, or around 20 per cent, and of 244 in all other accidents, or about 25 per cent. The largest number of deaths was due to automobiles (447), the second to falls (367), the third to drowning (eighty-eight), the fourth to burns and the fifth to railroad trains but involving automobiles. Other important causes were trauma by firearms, excessive heat, electric currents, poisonous gases and other accidental poisonings. The report contains extensive tabulations classifying accidental deaths by causes, by years, by months, by occupations and by counties. Lists of unusual fatal accidents are interpolated in the report and are interesting as evidence of two common underlying causes of all accidents, namely carelessness and panic. The rising toll of accidental deaths bids fair to eclipse the saving made through advances in medicine and public health.

1. Kansas Accidental Deaths, 1937, published by the Kansas State Board of Health; 16 pages; planographed; gratis to health or safety officials.

## Association News

### SPECIAL SESSION OF HOUSE OF DELEGATES SEPTEMBER 16, 1938

All meetings of the special session of the House of Delegates of the American Medical Association to be held in Chicago September 16 will be in the Red Lacquer Room at the Palmer House. Delegates who wish to have accommodations at the Palmer House should make reservations immediately. The first meeting of the House of Delegates will be called to order at 10 a. m., Chicago daylight saving time, Friday, Sept. 16, 1938.

### STATE SECRETARIES AND EDITORS TO ATTEND SPECIAL SESSION OF HOUSE OF DELEGATES

The Board of Trustees has requested the secretaries of the constituent state medical associations and the editors of state medical journals to attend the special session of the House of Delegates of the American Medical Association to be held at the Palmer House in Chicago September 16.

The regular Annual Conference of Secretaries of Constituent State Medical Associations will not be held this year.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

### ALABAMA

**Proposed Activities of State Association.**—An outline of medical activities in Alabama is presented in a letter recently mailed to members of the state medical association by the president, Dr. Seale Harris, Birmingham. It is hoped that the monument to Dr. James Marion Sims, pioneer surgeon (1813-1883), approved at the last annual session of the association, will be ready for unveiling at the next meeting in April. An artist has been employed to prepare the model for and to supervise the construction of the monument, which will be in the form of a bronze statue to be placed on the state capitol grounds. Members are urged to participate actively in the movement to establish a four year medical school in Alabama and to cooperate to the fullest extent in the survey on medical care now under way by the American Medical Association. An appeal is also made to each physician to bring new members into the society and to take complete advantage of the opportunities offered by the society by attending scientific sessions and by use of facilities. Pointing out that each of the sixty-seven counties in the state has a full time health officer, Dr. Harris emphasizes the need and expense of an adequate health department and recommends that physicians throughout the state discuss with the representatives of the state legislature the necessity for continued support in this field.

### CALIFORNIA

**Health of Mexicans in California.**—The state department of health has published a statement on the health of Mexicans in California over a ten year period. Because the number of Mexicans in the state now is not known, the figures noted in the 1930 federal census are used: 368,013 Mexicans, or 6.5 per cent of the total population of the state, which at that time was 5,677,251. In 1930 there were 14,472 Mexican births registered, 17.2 per cent of the total number of births in the state (84,382); in 1933 there were 10,857, or 14.4 per cent of the total, and since that time there has been an annual increase, the total reaching 12,173 in 1937. During the ten years 1928-1937 there has been an annual average of 12,700 Mexican births in this state, or 15.2 per cent of the total. The infant mortality rates among Mexicans are particularly high; during the ten year period one third of all infant deaths in California were in Mexicans, giving an annual average of 1,556 of these deaths. Typhoid and diphtheria are highly fatal to Mexicans; 20 and 24 per cent, respectively, of all deaths in the state from these diseases during the past nine years were in Mexicans. Pneumonia

monia and influenza caused 17 and 12 per cent, respectively, of all deaths among Mexicans; 22 per cent of all deaths were from tuberculosis, and 18 per cent of all deaths in childbirth from 1929 to 1937, inclusive, were among Mexican mothers.

### DELAWARE

**Nemours Foundation for Crippled Children.**—Construction will begin in October on a new 100 bed hospital for crippled children within the Nemours Estate near Wilmington under the auspices of the Nemours Foundation for Crippled Children. The tentative date for the opening of the hospital is the fall of 1939, according to the *Delaware State Medical Journal*. Children up to the age of 16 years will be admitted to the hospital but may be kept for educational purposes to an older age if necessary. Carrying out the terms of the will of the late Mr. Alfred I. du Pont, the Nemours Foundation for Crippled Children was incorporated Sept. 2, 1936, with the following trustees: Mrs. Alfred I. du Pont, her brother Mr. Edward Ball, and Mr. du Pont's son-in-law Col. Reginald S. Huidekoper. A medical advisory board was appointed consisting of the following members:

Dr. Thomas R. Brown, associate professor of medicine, Johns Hopkins University School of Medicine, Baltimore, chairman.  
Dr. Robert B. Osgood, John B. and Buckminster Brown, professor emeritus of orthopedic surgery, Harvard University Medical School, Boston, secretary.  
Dr. Philip D. Wilson, clinical professor of orthopedic surgery, Columbia University College of Physicians and Surgeons, New York.  
Dr. George E. Bennett, associate professor of orthopedic surgery at Johns Hopkins.  
Dr. DeWitt B. Casler, associate in gynecology at Johns Hopkins.  
Dr. William T. Graham, professor of orthopedic surgery, Medical College of Virginia, Richmond.  
Dr. Beverley R. Tucker, emeritus professor of neuropsychiatry, Medical College of Virginia, Richmond.  
Dr. Michael Hoke, Beaufort, S. C., formerly chief surgeon at Warm Springs Foundation, Warm Springs, Ga.

A four point program has been adopted by the advisory board: medical care of the crippled child, which begins with the construction of the new hospital; education of the crippled child; research on problems relating to the crippled child, and graduate instruction for persons interested in this field. Concerning the education of the crippled child, it is proposed, after the hospital is opened, to build several cottages, separate from the hospital, for the convalescent school children. A school building will be erected later. In the educational program emphasis will be placed on the vocational education of the child over 14 years of age. Following this training it is hoped to find permanent employment for these children. All types of training will be offered, the child's physical handicap to be the deciding factor. Primary and secondary school education will be given to the younger children. The research program will include both laboratory and clinical problems. The original laboratories will be for biochemistry and bacteriology with facilities for pathology. These will be staffed by a personnel particularly interested in research problems and a certain number of hospital beds will be available for the research division so that the clinical and laboratory work may be coordinated. For the coming year four research fellowships have been established in selected medical centers for the study of problems directly related to crippling diseases in childhood. Courses of graduate instruction in orthopedic work will be established as soon as warranted by the organization of the hospital and the institution at large. At the beginning only crippled children from the state of Delaware will be admitted; it has been estimated that there are about 200 in need of hospital care. According to the state medical journal, the chief difference between this and similar institutions is the emphasis on vocational education of the crippled child and on research. Dr. Alfred R. Shands Jr., formerly associate professor of surgery in charge of orthopedics, Duke University School of Medicine, Durham, N. C., was appointed medical director of the foundation in June 1937.

### ILLINOIS

**New Building for St. John's Hospital.**—A new building to replace the central structure of the present St. John's Hospital, Springfield, is now under construction. When completed, the main part of the unit will be twelve stories high and cost \$1,200,000. The first floor will accommodate the physical therapy department, kitchens, coffee shop, pharmacy and central sterilizing department as well as the lobby and waiting rooms. The second to seventh floors will contain rooms and wards, while the eighth floor will be devoted to infectious diseases. The ninth floor will contain the septic surgical department, surgical dressing and specialists' departments, separate provisions being made for treatment of the eye and throat, dental work and bronchoscopy under both local and general

anesthesia. The operative floor is the tenth with laboratories on the eleventh. Solariums and storage rooms occupy the twelfth floor. The thirteenth and fourteenth floors cover only a small part of the building area and are used for the mechanical equipment. Rev. J. L. Gatton is director of the hospital.

### Chicago

**Coordinating Committee on Cancer.**—The University of Chicago has appointed a committee on cancer to correlate its program of research and the clinical treatment of cancer. According to the announcement the creation of the committee, which will operate virtually as a cancer institute, was made necessary by the comprehensive nature of modern investigation of the disease. The new committee will correlate all basic research with the efforts of the clinical departments and serve as a clearing house for all the university investigators in nine departments; it will also advise the administration as to needs and policies of the general program. Members of the committee include:

Dr. Alexander Brunschwig, chairman of the committee.  
Dr. Fred L. Adair, chairman of the department of obstetrics and gynecology and chief of staff of the Chicago Lying-In Hospital.  
Dr. Percival Bailey, professor of surgery (neurosurgery) and neurology.  
Arthur H. Compton, Ph.D., Charles H. Swift distinguished service professor of physics.  
Dr. George F. Dick, chairman of the department of medicine.  
William D. Harkins, Ph.D., Andrew MacLeish distinguished service professor of chemistry.  
Dr. Paul C. Hodges, professor of roentgenology.  
Thorfin R. Hogness, Ph.D., professor of chemistry.  
Fred C. Koch, Ph.D., chairman of the department of biochemistry.  
Ezra J. Kraus, Ph.D., chairman of the department of botany.  
Dr. Dallas B. Phenister, chairman of the department of surgery.  
Maud Slye, Sc.D., associate professor of pathology.  
Dr. Paul E. Steiner, assistant professor of pathology, secretary.  
Dr. Harry Gideon Wells, chairman of the department of pathology.

Announcement was also made that the university had received a total of \$11,750 in grants and gifts for work on cancer. Three grants totaling \$7,500 were from the National Advisory Cancer Council of Washington and will facilitate research on the influence of cancer on stomach secretions, research on hormones and on chemical substances in cancer tissues. The International Cancer Research Foundation made a grant of \$2,000. The Educational Association on Cancer has given the university \$2,250 to establish a lectureship on cancer and bring noted scientific speakers to the quadrangles.

### INDIANA

**State Medical Meeting at Indianapolis.**—The eighty-ninth annual session of the Indiana State Medical Association will be held at the Murat Temple, Indianapolis, October 4-6. Out of state speakers will include:

Dr. Henry F. Helmholz, Rochester, Minn., Recent Advances in Pediatrics as Applied to General Practice.  
Dr. Charles A. Elliott, Chicago, Management of Pneumonia.  
Dr. Henry S. Ruth, Merion Station, Pa., Physical Signs of Inhalation Anesthesia.  
Dr. Walter E. Dandy, Baltimore, Mènière's Disease.  
Dr. Frank E. Adair, New York, Tumors of the Breast.  
Dr. Everett D. Plass, Iowa City, Obstetrics for the General Practitioner.  
Dr. Herman L. Kretschmer, Chicago, Cystitis in Women and Female Children.

Among the Indiana physicians on the program are the following:

Dr. Edwin Rogers Smith, Indianapolis, Metrazol in the Treatment of Schizophrenia.  
Dr. Wayne R. Glock, Fort Wayne, Treatment of Hip Fractures.  
Dr. Frank W. Ratcliff, Lafayette, Nupercaine Combinations Used in Spinal Anesthesia—Eight Year Review.  
Dr. Charles N. Combs, Terre Haute, Cyclopropane—A Résumé of Personal Experience.

A symposium on syphilis will be held Wednesday afternoon with the following speakers: Drs. Wemple Dodds, Crawfordville; Minor W. Miller, Evansville; Floyd R. Nicholas, Carter, South Bend, and Clifford L. Williams, Logansport. Dr. Herman M. Baker, Evansville, will preside at the annual banquet Wednesday evening when the certificate of merit will be presented posthumously to Dr. Edmund D. Clark, Indianapolis, president in 1937 of the state medical association. The speakers will be Drs. Rock Sleyster, Wauwatosa, Wis., President-Elect, American Medical Association, whose subject is not announced, and George E. Vincent, LL.D., Greenwield, Conn., on "The Pain of Thinking."

### KENTUCKY

**Personal.**—Dr. Otis R. Lynch, Brandenburg, has resigned as health officer of Meade County to enter private practice in Marengo, Ind.—Dr. Ollie M. Goodloe, Maysville, has resigned as health officer of Mason County to become field director of the state board of health for Eastern Kentucky, with headquarters in Lexington. Dr. Chadwick W. Christine, Louisville, has been appointed to succeed Dr. Goodloe.

**Society News.**—Dr. J. Watts Stovall, Grayson, addressed the Carter County Medical Society, Olive Hill, recently on "Care of the Indigent Sick and Responsibility of the Government for the Payment for This Care."—The Rockcastle County Medical Society was recently reorganized with Dr. Nevil M. Garrett, Brodhead, as president; Dr. Thomas A. Griffith, Mount Vernon, vice president, and Dr. Lee Chesnut, Mount Vernon, secretary. Dr. Eugene J. Brown, Stanford, addressed the June meeting on diagnosis.

#### MAINE

**Dr. Bragdon Honored at State Fair.**—Dr. Fred A. Bragdon, Springvale, was honored August 25 when a day at the state fair in Acton was dedicated to him in appreciation of his services to the community. A veteran race horse owner, he was presented with a gold horse mounted on a marble slab and a check with which to purchase a "horse of your own selection," newspapers reported. Mrs. Bragdon received flowers. Following his graduation from Bowdoin Medical School, Brunswick-Portland, in 1883, Dr. Bragdon practiced in Shapleigh for about nine years, then moved to Lynn, Mass., for one year. Then he moved to Springvale, where he has practiced ever since. He was presented with the fifty year medal by the Maine Medical Association five years ago. He will be 80 years old in October. Gov. Lewis O. Barrows was among the speakers at the ceremony.

#### MICHIGAN

**Study Program.**—The Flint department of health sponsored a study program at Mott Camp, Flint, September 6-10. The first three days were devoted to discussions of public health activities, the last two to a study by nurses of the health department's technic and procedure. The entire personnel of the department, including physicians, nurses, sanitarians, health educators, laboratory technicians and clerks, stayed at the camp the first three days, while only the nurses remained for the last two. The speakers included Drs. Don W. Gudakunst, Lansing, state health officer; Henry Cook, president of the state medical society, and Bernard W. Carey, Detroit, medical director of the Children's Fund of Michigan.

**Upper Peninsula Meeting.**—The Upper Peninsula Medical Society held its annual meeting at Sault Ste. Marie August 18-19. Hon. Paul Adams, mayor, gave the address of welcome and speakers on the scientific program included:

Dr. Walter G. Maddock, Ann Arbor, Peripheral Vascular Diseases with Special Reference to Varicose Ulcers and Varicose Veins.  
Dr. Carl E. Badgley, Ann Arbor, Back Pain.  
Dr. Floyd H. Lashmet, Petoskey, Nephritis and Pyelonephritis.  
Dr. William W. Bauer, Director, Bureau of Health Education, American Medical Association, Chicago, Relationship of County Health Units to the Profession.

Dr. James D. Bruce, Ann Arbor, director of postgraduate medical education, University of Michigan, Ann Arbor, addressed the banquet in the evening on "A Doctor's Inventory." Officers elected at the meeting included Drs. Albert H. Miller, Gladstone, president, and Stephen Mason, Menominee, vice president. The secretary will be chosen by the Escanaba group, which will act as host to the society next year.

#### MINNESOTA

**Alumni Reunion.**—The University of Minnesota Medical Alumni Association will hold its annual business meeting at a luncheon at the University Hospitals October 14, the day preceding the homecoming game with Michigan. Dr. Harold G. Benjamin, Minneapolis, has been appointed chairman of the program committee for the clinical presentation at the hospitals Friday morning.

**"Miracle Man" Forfeits Bond in Minnesota.**—The bail bond of J. A. White, alias Professor White, alias Dr. White, was ordered forfeited by Judge F. A. Alexander of the municipal court at Owatonna, and a bench warrant was issued for his arrest August 3, following his failure to appear in court for a preliminary hearing after his arrest for practicing healing without a basic science certificate. The order means that the bondsmen will have to pay Steele County \$750. White was arrested July 24 at Ladysmith, Wis., following a joint investigation of his activities by the Minnesota State Board of Medical Examiners and Steele County. He waived extradition and was returned to Owatonna, where he was released on bond. White arrived in Steele County in the latter part of March driving a Packard car with Georgia license plates, according to the state board of medical examiners. Because of a bad snowstorm, he asked for shelter at the home of farmers a few miles west of Owatonna. He re-

resented himself as "Professor" White and also as "Dr." White; he claimed to be a psychoanalyst and in a few days was diagnosing ailments and suggesting pills, tablets and capsules, charging each patient from \$6 to \$40. The medicine was purchased by White at drugstores in Owatonna for a fraction of the amount he charged. When White's fingerprints were sent to the federal bureau of investigation at Washington, Sheriff E. T. Helgeson of Steele County was notified that White was wanted at Jesup, Ga., for swindling and practicing medicine without a license. White in the meantime had secured his release at Owatonna on bond and started for parts unknown. He also had been arrested in Detroit in 1918 on a charge of "larceny by trick." He claims to have been born in 1858 but appears to be between 60 and 65 years of age; he is accompanied by Mrs. White. Newspapers reported in 1922 that the "miracle man," "Prof." J. A. White, was ordered to leave Shelbyville, Ind.

#### MISSISSIPPI

**Society News.**—At a meeting of the Coast Counties Medical Society in Biloxi July 6, Dr. Frank O. Schmidt, Ocean Springs, discussed "Volvulus of the Cecum."—The North Mississippi Medical Society was addressed in New Albany July 20 by Drs. Joseph E. Green, Laurel, on "Vital Problems Concerning the Mississippi Medical Association"; James P. Wall, Jackson, "Louis Pasteur, the Father of Modern Medicine," and Seale Harris, Birmingham, Ala., "The Relation of the Endocrine Glands to Hyperinsulinism."—The Hattiesburg Clinical Society was organized recently with Drs. Theophilus E. Ross Jr. as president; Richard H. Clark, vice president, and Lawrence B. Hudson Jr., secretary, all of Hattiesburg.

#### NEW JERSEY

**President of the State Medical Society.**—Dr. Stuart Zeh Hawkes, Newark, writes that his father, Dr. Edward M. Zeh Hawkes, Newark, was named president-elect of the Medical Society of New Jersey at the annual meeting in May. A news item in THE JOURNAL August 6 gave the son's name as the officer elected.

**State Society Sponsors Clinical Conference.**—The Medical Society of New Jersey will sponsor a clinical conference October 6-7 in the various hospitals of Newark and Essex County. Dr. Harrison S. Martland, chief medical examiner of the county, will conduct a clinicopathologic conference at the Academy of Medicine, Newark, in the afternoon of the first day. Sessions Friday will be held in seventeen hospitals and medical centers by 179 members of the staffs.

#### NEW YORK

**Typhoid Closes Children's Camp.**—Three cases of typhoid recently appeared in a camp for children operated by the Heckscher Foundation for Children of New York at Putnam Valley in Putnam County near Peekskill. On the advice of the state department of health, about 650 children who had been in the camp since July 1 were returned to their homes. Investigation gave evidence that the source of the disease was in a polluted brook from which the water supply was pumped. The water was chlorinated and passed through filters, but it is believed that the chlorine demand rose greatly following heavy rains in July and permitted incompletely chlorinated water to enter the supply, according to a report in *Health News*.

#### New York City

**Report on Blood Banks.**—About 2,000 persons have donated blood for "blood banks" established in the city hospitals in June, the commissioner of hospitals recently reported. There have been more than 600 in Brooklyn alone. The banks were begun this year when it became apparent that funds for hiring professional donors would be exhausted before the year was over. In 1937 the city expended \$171,599.86 for this purpose.

**Automobile Deaths Reduced.**—Automobile accidents caused 414 deaths in the first six months of 1938 in New York City, nineteen less than the number in 1937. The number of injured also decreased from 15,317 to 14,334. Fifty-five children were killed, compared with sixty-nine in the first six months of last year. Carelessness in crossing against traffic lights caused the deaths of 109 and jaywalking caused seventy deaths. Collisions between vehicles caused sixty-three deaths and injuries to 5,357. Other causes were: running off sidewalk into roadway, twenty-six deaths; reckless driving, twelve; skidding, twelve; falling from moving vehicles, seven, and vehicles turning corners, eight. Under the cause "driver of vehicle intoxicated" there were two deaths and sixty-six were injured.



## NORTH CAROLINA

**Venereal Disease Clinic at Charlotte.**—The city of Charlotte and Mecklenburg County, in cooperation with the state board of health, has established a venereal disease clinic, with Dr. Paul J. Chambers, Charlotte, as director. Dr. Leon A. Beardsley, Waverly, health officer of Humphreys County (Tenn.), will be in charge temporarily while Dr. Chambers takes a special course in syphilis control at Johns Hopkins University School of Medicine, Baltimore.

## PENNSYLVANIA

**District Meeting.**—The annual meeting of the Ninth Councilor District of the Medical Society of the State of Pennsylvania was held in Punxsutawney September 8. Speakers at the morning session were Drs. Benjamin F. Coc, Indiana, and Joseph C. Lee, Clymer, on "Backache"; Thomas Craig McKee, Kittanning, "Gynecologic Treatment in General Practice"; Joseph M. Lukehart, Punxsutawney, "Acute Head Colds, Complications and Treatment." At the afternoon session Dr. William J. Armstrong, Butler, discussed the American Medical Association's survey of medical needs; Dr. Chauncey L. Palmer, Pittsburgh, "What We May Expect in Medical Legislation," and Dr. Elmer Hess, Erie, "The Physician in Self Defense: How Shall He Defend Himself?"

## TENNESSEE

**Physician's Library Goes to Hospital.**—The medical library of the late Dr. Victor D. Holloway, Knoxville, has been presented to the Knoxville General Hospital by his widow and daughter. The library, containing 525 volumes and 137 issues of medical journals, has been placed in a special alcove adjoining the hospital record room. Dr. Holloway died June 24.

**Society News.**—Dr. William D. Haggard, Nashville, among others, addressed the Hardin, Lawrence, Lewis, Perry and Wayne Counties Medical Society in Clifton July 26 on "Diagnosis of Surgical Diseases of the Rectum with Special Reference to Cancer." The society met June 28 at Shiloh National Park with physicians from several other counties in Tennessee and Mississippi as guests. The speakers were Drs. John B. Nuckolls, Jackson, "Urinary Tract Infections"; Stanley A. Hill, Corinth, Miss., "Fractures of the Elbow"; Le Roy B. Brackstone, Iuka, Miss., "Amoebiasis," and John L. McGehee, Memphis, "Cryptorchidism and the Torek Operation for Relief."—Drs. Carl W. Brabson, Telford, and John L. Hankins, Johnson City, addressed the Washington County Medical Society July 7 on "Hypertrophy of the Prostate" and "Backache" respectively.

## WEST VIRGINIA

**Campaign to Encourage Birth Registration.**—The West Virginia State Health Department with the cooperation of the U. S. Bureau of the Census will sponsor a "Birth Registration Week" during the week of October 2. A central committee representing the health department, the census bureau, the state medical association, the parent-teacher association, the state federation of women's clubs, the state agricultural extension division, the state public assistance department, the American Legion and the WPA has planned an intensive campaign for each county, designed to make every citizen aware of the importance of birth registration.

**Enlarge Hospital for Crippled Children.**—A new seventy-five bed wing of the Morris Memorial Hospital for crippled children near Milton was opened July 10. The unit cost \$250,000, made available from WPA funds. In 1935 the state legislature appropriated \$20,000 for improvements and in 1937 \$64,000 to assist the hospital to take advantage of federal aid. When the project is completed there will be a main hospital building with two wings of seventy-five beds each, a central administration building with operating rooms, offices, nurses' and surgeons' quarters, a hydrotherapeutic unit, a school building and various farm buildings. In addition to one wing of the hospital, the hydrotherapeutic building, the dairy barn, a road to the main highway and several small farm buildings have been completed.

## WYOMING

**Plague Infection.**—According to *Public Health Reports*, plague infection was demonstrated in a pool of eighteen fleas collected from eight prairie dogs (*Cynomys leucurus*) shot June 27 eight miles northwest of Evanston, Uinta County, and in animal tissue and in pools of fleas from *Citellus armatus*, all within from two to eight miles of Cokeville, Lincoln County.

## CANAL ZONE

**Society News.**—The Medical Association of the Isthmian Canal Zone met at the Gorgas Memorial Laboratory, Panama, Republic of Panama, June 21, with the following speakers: Drs. Jesse C. Ellington, Ancon, on "Infant Mortality in Panama City"; Maximo Carrizo y Villarreal, Panama, "A Preliminary Report on the Roentgenologic Aspect of Childhood Tuberculosis in Panama City"; Agustin A. Sosa, Panama, "Pulmonary Tuberculosis in the Adult as Seen in Panama" and Amadeo Vicente-Mastellari, Panama, "Diphtheria Studies in Panama."

## GENERAL

**Journal of Social Ophthalmology.**—The International Association for the Prevention of Blindness has begun publication of the *Journal of Social Ophthalmology*, a quarterly with articles in both French and English. Its purpose, according to an announcement from the National Society for the Prevention of Blindness, is to facilitate the exchange of information throughout the world in the organized campaign for the prevention of blindness and the conservation of vision. The international association's headquarters are at 66 Boulevard Michel, Paris.

**Society News.**—Dr. McIver Woody, New York, was named president of the American Association of Industrial Physicians and Surgeons at the recent annual meeting in Chicago. Dr. Clarence D. Selby, Detroit, became president and vice presidents elected were Drs. Daniel L. Lynch, Boston, and Lloyd Noland, Fairfield and Birmingham, Ala. Dr. Volney S. Cheney, Chicago, was reelected secretary.—The annual meeting of the Polish Medical and Dental Association of America was held in Pittsburgh August 25-27. Among the speakers were Drs. Lester Hollander, Pittsburgh, on "Skin Disease from the Standpoint of the General Practitioner"; Ralph E. Tafel, Pittsburgh, "Human Sterility"; Francis L. Zaborowski, Philadelphia, "Important Factors in Speeding Up Postoperative Wound Healing," and Samuel Glenn Major, Pittsburgh, "Mouth and Face Surgery."—The National Recreation Association will hold its annual meeting in Pittsburgh October 3-7.

**Changes in Status of Licensure.**—The State Medical Board of the Arkansas Medical Society announces the following:

Dr. Luther W. Copeland, Trumann, license restored June 9.

The Massachusetts Board of Registration in Medicine announces the following:

Dr. Russell B. Street, Conway, license restored April 28.

The Minnesota State Board of Medical Examiners reports the following action:

Dr. George H. Espenlaub, Evansville, Ind., license revoked May 11 on his conviction for assault and battery.

The New York state board of medical examiners recently reported the following action:

Dr. Julius Warren Blakely, whose last known address was Highland, N. Y., license revoked April 14, on his conviction of a felony.

Dr. Herman B. Elster, whose last known address was 505 West End Avenue, New York, license suspended for nine months.

**Patients at National Leprosarium Plead for New Location.**—At a mass meeting August 17 the patients at the National Leprosarium, Carville, La., adopted a resolution requesting a change in location for the national leprosarium and asserting their belief that the present location is detrimental to their health and well being. Reviewing the history of the leprosarium, the resolution states that Carville was originally the site of the Louisiana State Leprosarium, established in 1894. This site was accepted as a last resort when favorable locations in other communities could not be secured, because of the objections of residents. Thus, it is stated, the unsuitability of the Carville location was recognized then and a five year lease of the place was made as a temporary measure. For eight years no improvements were made and in the meantime another site was purchased. Plans to move the leprosarium to the new location were frustrated when residents of the vicinity burned the buildings. The present site at Carville was purchased as a permanent location in 1905. The U. S. government purchased the Louisiana leprosarium in 1921. A national committee spent four years investigating other locations and recommended sites in several other states as preferable to Louisiana, but the objections in these states resulted in the purchase of the Louisiana site. Emphasizing the fact that malaria is prevalent in the tropics, the resolution points out that from May 1, 1935, to May 1, 1936, there were 155 cases of malaria among the patients at the leprosarium, 42 per cent of the entire patient body. A similar percentage

of the personnel was also affected. Of the 155 patients forty-two died before May 1, 1938; of the deaths it was said that malaria was a contributing cause or at least an accelerating factor. Other patients in this group, with their resistance weakened by malaria, have experienced marked retrogression of their clinical condition and cases that had been in a quiescent state for twelve years or more have been reactivated, it is alleged. According to the resolution, the present location is undesirable not only from a climatic standpoint but from a geographic one as well, the hospital being situated in the inner bend of the Mississippi River, which bounds it on three sides, and the peninsular area thus formed is a swampy lowland with elevation below that of the normal river stage, and the yearly flood waters are a constant menace to life and property. The resolution also points out that in forty-four years of the leprosarium's existence both as a state and as a national institution no member of the medical and nursing staff or of the 200 employees has been known to contract the disease as a result of contact with the patients or otherwise, and that no case of leprosy has developed in the adjoining community. Submitted on behalf of the Patients' Federation, representing the patient body of the institution, the resolution concludes with an appeal to the U. S. Public Health Service to exert its utmost efforts toward securing a suitable location for the construction of a national leprosarium; a site which, as far as possible, shall have a climate with none of the objectionable features mentioned and which shall promote rather than retard recovery as well as the return of the patients to society as no longer a menace to others. Congress recently appropriated \$5,000,000 for the construction of new buildings at the leprosarium.

**American Roentgen Ray Society.**—The thirty-ninth annual meeting of the American Roentgen Ray Society will be held at Haddon Hall, Atlantic City, N. J., September 20-23. There will be a symposium on heart disease in which the following will participate: Drs. Fred J. Hodges, Ann Arbor, Mich.; George P. Robb and Israel Steinberg, New York; Eugene Freedman, Cleveland; Merrill C. Sosman and George Levene, Boston; Hugo Roesler, Philadelphia, and Marcy L. Sussman, New York. In a symposium on growth the speakers will be Drs. Stanley P. Reimann and Baldwin H. E. W. Lucke, Philadelphia; Phineas W. Whiting, Ph.D., Jacob R. Schramm, Ph.D., and Frederick S. Hammett, Ph.D., Philadelphia. Among the speakers will be the following:

Drs. Karl Kornblum and Lawrence C. Fisher, Philadelphia, Carcinoma as a Complication of Achalasia of the Esophagus.

Dr. Jacob Gershon-Cohen, Dr. Harry Shay and Samuel S. Fels, Philadelphia, The Relation of Meal Temperature to Gastric Motility and Secretion.

Drs. William Snow and Meyer Rosensohn, New York, Roentgen Visualization of the Soft Tissues in Pregnancy.

Drs. Wilmer B. Frior and Charles A. Walters, Baltimore, The Present Status of Roentgen Treatment of Sinus Infections.

Dr. Lawrence Reynolds, Henrietta S. Hayden, Ph.D., and Kenneth Corrigan, Ph.D., Detroit, Roentgen Ray Diffraction Studies of Human Nervous Tissue.

Dr. Carleton B. Peirce, Montreal, Tuberculous Tracheobronchitis.

Lauriston S. Taylor, A.B., and George Singer, A.B., Washington, D. C., The Use of Protection for X-Ray Voltages Up to 400 Kilovolts.

Dr. Sydney J. Hawley, Danville, Pa., A Method for Obtaining Greater Ratio of Deep to Surface Dosage.

This year the society introduces a series of educational courses of one hour each day. Dr. Joseph McFarland, Philadelphia, will deliver the Caldwell Lecture Tuesday evening September 20 on "Keeping in Step with Science." The annual banquet will be Thursday evening. The annual golf tournament will be held Monday September 19 at the Seaview Golf Club; this year for the first time the Willis F. Manges Memorial Cup will be awarded.

## CANADA

**Society News.**—Dr. John H. L. Simpson, Springhill, was elected president of the Medical Society of Nova Scotia, now the Canadian Medical Association, Nova Scotia Division, at the annual meeting in Halifax in June. Vice presidents are Drs. Henry K. MacDonald, Halifax, and Alexander B. Campbell, Bear River, and the secretary is Dr. Harry G. Grant, Halifax. The next annual meeting will be at Digby.

**Otolaryngologist Wins British Award.**—Dr. William J. McNally, otolaryngologist to the Royal Victoria Hospital, Montreal, was recently awarded the Dalby Prize of the Royal Society of Medicine of England "for the best work in otology published or done during the previous five years." The prize, which is a check for 100 guineas, was established fifteen years ago by Lady Dalby as a memorial to Sir William Dalby. Previous recipients of the prize were Drs. Otto Mayer of Austria and Albert A. Gray of Scotland. Dr. McNally has been conducting research on the functioning of the internal ear.

## FOREIGN

**Society News.**—Dr. Thomas Fraser, consulting physician of the Royal Infirmary, Aberdeen, Scotland, was chosen president of the British Medical Association for 1939-1940. Dr. Colin D. Lindsay, Plymouth, is the president for the current year.—At a meeting of the Osler Club of London July 12 on the eighty-ninth anniversary of the death of Sir William Osler, Dr. Thomas Archibald Malloch, New York, librarian of the New York Academy of Medicine, delivered the eleventh Oslerian Oration on the life and work of Osler. Dr. Harvey Cushing, Sterling professor of neurology, emeritus, Yale University School of Medicine, New Haven, also spoke.

**Personal.**—Charles R. Harington, Ph.D., professor of pathologic chemistry, and Dr. William W. C. Topley, professor of bacteriology and immunology, in the University of London, have been appointed members of the Medical Research Council to succeed Dr. Alfred J. Clark and Sir John C. G. Ledingham, who retire September 30.—William H. Tytler, research bacteriologist of the Welsh National Memorial Association, has been appointed to the David Davis Chair of Tuberculosis in the Welsh National School of Medicine of the University of Wales to succeed Prof. Stevenson Lyle Cummins, who has retired.—Dr. Carl G. Jung, professor of psychology at the University of Zurich, Switzerland, received the honorary degree of doctor of science from Oxford University, where he presided at the tenth International Congress of Medical Psychotherapy.

**Cholera Vaccine for China.**—The Chinese government has recently appealed to the League of Nations for six million doses of cholera vaccine to combat the epidemic in the central and southwestern regions. The *Lancet* reports that the following countries have responded: Australia and Ceylon 500,000 doses each, Philippine Islands (Red Cross) 1,000,000, Denmark 130,000, Rumania 1,000,000, Yugoslavia 500,000, Turkey 1,000,000 and Egypt 180,000. The Pasteur Institute at Hanoi had previously sent 250,000, according to this report; the National Institute of Bacteriology, Buenos Aires, has offered 200,000, and the American Red Cross was preparing to ship 3,000,000. The League's epidemic commission has established three units, which have undertaken smallpox vaccination on a large scale and measures against typhus, including inoculation, delousing, supervision of refugees and establishment of hospitals. Two tons of quinine has been sent to China for the campaign against malaria and efforts are in progress to reduce syphilis, rabies, plague and the diseases of malnutrition.

## Deaths in Other Countries

Sir David P. D. Wilkie, professor of surgery, University of Edinburgh; surgeon to the Royal Infirmary, Edinburgh; member of the Medical Research Council; died in London August 29, aged 56.

## Government Services

### Examination for Army Medical Corps

The War Department announces an examination December 5-9, both dates inclusive, for the purpose of qualifying candidates for appointment as first lieutenants in the Medical Corps, Regular Army, to fill vacancies occurring during the fiscal year 1939. The examination is open to all male graduates of acceptable medical schools who have completed a year's internship in an approved hospital and who will be not more than 32 years old at the time it is possible to tender a commission. The examination will be conducted by boards of officers in various parts of the United States and will consist of a physical examination, a written examination in professional subjects and a determination of the candidate's adaptability for military service. Licentiatees of the National Board of Medical Examiners may be exempted from the written professional examination. Information and application blanks may be obtained from the Adjutant General, War Department, Washington, D. C. Applications will not be considered after November 19.

## CORRECTION

**Percentage of Necropsies.**—In the Educational Number of THE JOURNAL, August 27, the percentage of necropsies for the Research Hospital, Kansas City, Mo., was incorrectly listed as 19 instead of 69 per cent.

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Aug. 20, 1938.

#### The Annual Meeting of the British Association

The annual meeting of the British Association for the Advancement of Science was held at Cambridge. As usual, some of the papers had a special interest for physicians.

#### VISION AIDED BY SCIENCE

The president, Lord Rayleigh, took natural vision and vision aided by science as the subject of his address. He said that the combination of qualities of the human eye which allowed rapid changes to be followed was ideal for nature's primary purpose, finding subsistence under primitive conditions and fighting the battle of life against natural enemies. The use of lenses was one of the greatest scientific advances, but we did not know who made it. Spectacle lenses were a medical invention dating from about A. D. 1280. Lenses led to the telescope and the microscope. In theory there was no limit to the telescope, but there was a definite limit to the microscope, depending on the structure of light. Something, but not very much, could be gained by the use of ultraviolet radiation instead of visible light, and it then became necessary to work by photography. But here we had not come to an end and had two alternatives. Paradoxical as it might seem, we could make out of empty space lenses for certain radiations, or we could make optical observations without any lenses at all. Cathode rays could be bent by electric or magnetic forces, and a system of "electron optics" had been elaborated. A beam of cathode rays issuing from a point could be reassembled into an image, and a magnified image of the sources of electrons could be formed on a fluorescent screen. After a reference to the "electron microscope," he said that obscure regions between the smallest organisms and the largest crystalline structure might be explored with the electron microscope. Color vision was one of nature's most wonderful achievements, which anatomy did not explain. The retinal cones were probably responsible for it, but no division into three kinds corresponding to the three color sensations had ever been observed. Nor did any known anatomical peculiarity distinguish a color-blind from a normal eye.

#### THE PERVERSION OF ANTHROPOLOGY

In the Section of Geography Griffith Taylor, professor of geography in the University of Toronto, said that today the social sciences were challenged by the forces of reaction, the perverted use of anthropology and sociology to advance the views of some of the totalitarian nations. Geographers might do yeoman service by the scientific teaching of what was becoming known as cultural geography. Referring to his twenty years of work on the migration and theory of racial evolution, Professor Taylor said that all the progressive nations were built up of the same three stocks, Alpine, Nordic and Mediterranean. When this thesis was accepted much of the evil structure based on race prejudice must fall. Race prejudice was but another name for ethnologic ignorance. We were all agreed that the term Aryan could be applied only to speech, but few people realized that the term Jew could be used only in connection with religion. We needed a new term to express a group linked by purely cultural characters, such as language or religion. For instance, in Canada we did not have a French race, since Frenchmen might belong to any of the three distinct races. We had only a French cult linked closely by religion and to a less extent by language. So also we should learn to speak of a Jewish cult, since this large group was linked closely by religion and to a lesser degree

by language. The Jews, like the Germans, were of two different races. If they came from Poland they belonged to the Alpine race; if from Spain, to the Mediterranean. The linguistic divisions in Europe were Aryan and Altaic, but the race divisions were Nordic, Alpine and Mediterranean. The German nation was half Nordic and half Alpine. The Jews in Europe belonged to a cult, and racially about three-fourths were broad-headed Alpines, like the other mid-Europeans. The explanation was the widespread conversions to Judaism which took place in the past in eastern Europe. Racially the Jews were Alpines like the rest of the South Germans.

#### The Health of the Nation

A steady improvement in the national health is shown in the nineteenth annual report of the ministry of health, which has just been published. A comparison with 100 years ago reveals the magnitude of the advance. In 1838 the general death rate was 22.4 per thousand compared with 12 today. The death rate for tuberculosis was 4,480 per million, against 700 today. More than 1,000 persons per million died from smallpox and twenty-two from cholera, while there was not a single death from these diseases last year. The death rate for typhoid was 1,228 per million, against 5 today. The maternal mortality, which has been unsatisfactory and refractory, shows a substantial fall. The rate in 1937 was 3.1 per thousand births, against 3.6 in 1936 and 3.9 in 1935. The infant mortality was 58 per thousand births, compared with 59 in the previous year, but was slightly above the record figure of 57 in 1935. There are now 3,145 infant welfare centers in England, an increase of ninety-four over 1936. The crude death rate from tuberculosis per million in England and Wales was 695, against 692 in 1936 and 718 in 1935. There was a decrease in the reported cases of enteric fever (including paratyphoid) from 2,490 in 1936 to 2,149 in 1937. A feature of the report is the presentation of the statistics for Wales in a separate table. They show the great fall in the birth rate which has gone on in Great Britain for many years. In 1901, when the population of Wales was just over 2,000,000, there were 62,233 births; in 1937 the population was nearly 2,500,000 but there were only 37,175 births, a fall of over 50 per cent. During the same period the death rate fell from 18.1 to 10.5 per thousand but the infant mortality fell from 161 to 63 per thousand live births, which to some extent counteracted the effect of the fall of the birth rate. Another gratifying feature was a fall in the maternal mortality from 6.61 per thousand births in 1904 to 4.54 in 1937, the lowest yet attained.

#### The Agreement Between the Various Schools of Psychotherapy

At the tenth International Congress for Psychotherapy, which was held at Oxford, Prof. C. J. Jung, the president, gave an address in which he explained fourteen points on which agreement had been reached between the conflicting schools by the Swiss branch of the congress. Because of want of agreement it had proved impossible to include psychotherapy in an academic curriculum, but there was more common ground than was generally realized. The points of agreement were as follows: The first objective was diagnosis, which depended on the anamnesis—the relation of the patient to his difficulties and the symptoms. The results showed that there were forms of illness which had nothing to do with bodily disturbances but were intelligible only in terms of the mind. The method of diagnosis was therefore focused not on the seat of illness but on the general psychic disposition. It considered all possible means of expression: premeditated speech, free association, fantasies, dreams, symptoms and demeanor. It found an etiology reaching down into the depths of the personality and so transcending the limits of the conscious mind. The dark por-

tion of the psyche was called the unconscious. This investigation led to the discovery of unconscious fixation on crucial situations and persons significant in the patient's childhood. These fixations had both a causal and a purposive aspect and set tasks for future fulfilment. One of the tasks of psychotherapy was to illuminate the factors out of which the illness developed, and its method was the analysis and interpretation of all forms of expression. The therapeutic development of the patient depended on the relation between him and the physician, and this formed the basis of his relation to society. In treatment this relation took the specific form of transference, which was the projection of unconscious contents and appeared as a transference neurosis. The reduction of the transference neurosis showed it to have been laid down in the unconscious fixations of childhood. Behind these individual fixations, collective unconscious factors were assumed. The new contents had to be realized as parts of the personality, because only in this way could the patient feel his responsibility toward them.

At the close of the congress Professor Jung answered a number of questions. Psychology, he said, was such a large and difficult subject that the psychotherapist could not rest on his own training alone but must borrow from philosophy, anthropology, history and literature. Primitive psychology solved many difficulties. Primitive peoples had few traces of what we call "volition." For doing anything unusual they had to work themselves up ceremonially. At about the age of 36 the personality expanded into life, like an exploding celestial body. After 40 depression was frequent among those who had not fulfilled their ambitions. The great religions were preparation for the second half of life. Religious experience was a worldwide and universal phenomenon. One who did not know what it is was not normal. He did not recognize his own religious experience, and some other parts of life were exaggerated by the energy which should have gone into that experience. It was an insanity of the white man that he had lost the religious order of life.

## PARIS

(From Our Regular Correspondent)

Aug. 11, 1938.

### The Relation of Pulmonary Tuberculosis to Poor Housing

A book entitled "Tuberculosis and Social Medicine," by Dr. Etienne Bernard, has just been published. In the chapter on proper housing conditions in relation to tuberculosis, the author states that wherever attention has been given to sanitary living conditions as a governmental policy the death rate for tuberculosis has greatly decreased. This is especially true of Great Britain, but thus far little has been done in this direction in France. A study made in 1919 of all houses in which at least ten deaths from tuberculosis had taken place from 1894 to the end of 1918 revealed a total of 4,750 such houses, located chiefly in two densely populated wards of Paris. It was found that 186,000 persons lived under most inadequate and unhealthy conditions. It was then decided to demolish such houses and construct 20,000 others, to which the tenants would be moved. This plan has been carried out so far as the buildings themselves are concerned, but not more than 3 per cent, or 5,500, of the persons who were lodged in hovels and similar insanitary homes were able to move to the new buildings; the others could not afford to pay the rent asked by the city of Paris. In order to meet this objection, the city council has recently voted to construct 5,000 new houses or flats, to be rented at a low price, but it has been found that on account of the present high cost of construction it is difficult if not impossible to solve the problem in this manner. An effort has been made to build some "garden cities" in the suburbs of Paris to take care of 32,000 persons, and about 200,000 houses

have been constructed in other parts of France. Here again the government is confronted with the inability of those who live in shambles to pay the rents demanded for more sanitary homes. Since 1922 nearly three million houses have been constructed in England, at a cost which is nearly ten times that allotted in France for similar work. In Germany and Italy huge sums are also being spent for better housing conditions. Dr. Bernard in closing his chapter emphasizes the desirability of impressing the French government with the necessity of more liberal appropriations for this work.

### Neurologic Complications of Therapeutic Pneumothorax

Reference was made in a previous letter to a paper by Dr. Weissmann-Netter in which he reported three cases in which transitory symptoms referable to the central nervous system had followed insufflation of air in the treatment of pulmonary tuberculosis. The discussion of the subject was continued at the June 10 and June 17 meetings of the Société médicale des hôpitaux. The first paper was by Drs. Etienne Bernard and Boris Kreis, who were of the same opinion as Dr. Weissmann-Netter, that these complications are rare. The patient, a woman aged 33, had pulmonary tuberculosis of eight years' duration. She was seen by the authors for the first time in March 1938. No sequels were observed after three insufflations, but as soon as 75 cc. of air had entered the pleural cavity the pressure was suddenly raised in the insufflation apparatus. This was immediately followed by a few spasmodic movements of the right side of the face and the right arm, as well as by hemiplegia on the left side, which were believed to be due to an air embolism. Ability to move the left arm returned in less than a half hour, and only a slight muscular weakness on the left side could be found a few hours later. The chief object of the paper was to call attention to the fact that neurologic complications occur when the insufflation is made in spite of the fact that manometric oscillations are slight or have ceased and the needle on being withdrawn contains blood. These signs show that the lung has been punctured. Air embolism is found also when extensive pleural adhesions exist, so that the air enters only a small pocket and when the pressure exerted in the effort to introduce more air causes the latter to enter some vessel during the breaking down of adhesions. Air embolism can easily occur under either of these avoidable conditions. In the discussion Dr. Sèze added two cases of hemiplegia; the condition followed simple exploratory puncture in one and a therapeutic pneumothorax in the other. In both the lung had been punctured. He advised the use of as small a caliber needle as possible.

### Interesting Decision on Medical Responsibility

Since time immemorial it has been the custom for physicians to give their services gratuitously to colleagues and dependent members of their families. The question as to whether the same legal responsibility exists in such cases as when the physician is remunerated for his services is seldom raised. A recent decision rendered by the supreme court here on an appeal from a lower court is of considerable interest. After a series of radiation treatments for which no charge had been made by a radiotherapist, the patient, a physician, had as a sequel severe radiodermatitis. Suit was brought by the physician against the radiotherapist in the circuit court of Besançon in eastern France. The decision in this lower court was to the effect that, although it recognized the duty of every physician to give medical care without compensation to a colleague or to the dependent members of his family, nevertheless the attending physician retains the same responsibility toward the patient as though he had been remunerated for his services.

The supreme court, in reviewing the ease on an appeal from this decision of the lower court, reiterated the responsibility, from a legal point of view, of a physician in treating a colleague gratuitously and confirmed the decision of the lower court awarding damages to the physician-patient.

#### Celebration of Fiftieth Anniversary of Institut Pasteur

The opening session of the first international congress of French-speaking microbiologists, to be held October 26-29, will be devoted to a celebration of the fiftieth anniversary of the Institut Pasteur of Paris. Addresses will be made by Mr. Lebrun, president of the French republic, and Mr. Rucart, minister of public health. The following morning a number of papers will be presented on microbiologic subjects. The October 29 session will be devoted to a discussion of the ultravirus. Information regarding the congress can be obtained by writing to the Association des microbiologistes de langue française, Institut Pasteur, 28 rue du Docteur Roux, Paris 15.

#### BERLIN

(From Our Regular Correspondent)

July 21, 1938.

#### The Campaign Against Psittacosis

Psittacosis has become a domestic disease in Germany. Although the morbidity is still slight in comparison with other infectious diseases, Professor Haagen of the Infectious Diseases Institute, Berlin, emphasizes that all possible preventive measures are necessary to check the increasing frequency of epidemics. The danger of psittacosis should not be underestimated, as the morbidity among domestically bred stocks of psittaceous birds has increased steadily in recent years. The disease has been transmitted to man almost exclusively by the zebra-parakeet. Among nonpsittaceous birds the canary bears particular watching, since it appears to be extremely susceptible to the virus of psittacosis. In Austria a few years ago canaries were responsible for numerous cases in man. Since the ban on the importation of parrots, which was imposed in 1930, foreign birds have no longer been a conspicuous source of infection.

In the years 1932 and 1933 a recession in human cases of psittacosis was noted, but in 1934 a further increase began. At the same time the presence of the infection in latent form was determined in large numbers of domestically bred parakeets. A comprehensive antipsittacosis campaign was then initiated. The government declared psittacosis to be a menace to public health and decreed that all deaths, sickness and suspicion of sickness from this disease must be reported. The new law further provides for police supervision of the commercial breeding of parrots and parakeets. The appearance of sickness in several birds in a store or breeding establishment must be reported to the authorities. If psittacosis is subsequently found, the police may order the destruction of the entire suspected stock. The veterinary board of control is also empowered to confiscate and sequester any suspected stocks. The further sale of the birds can be prohibited, in which event the breeders and dealers are suitably compensated. If psittacosis is established, an attempt is made to trace the infection to its origin by a study of the history of the particular stock for five preceding months at least.

The older legislative measures applied only to commercial dealers and breeders. Experience has meanwhile taught that healthy birds often become infected in small, noncommercial breeding establishments. Accordingly on April 1, 1938, a new law became effective which places all aviculture of this sort under official supervision. All birds of the parrot kind must now be secured with foot-rings. The new legislation envisages control of an important source of infection, the noncommercial

breeding establishments; this is all the more necessary as the private maintenance of parakeets has assumed extraordinary proportions in Germany. If within a reasonable period psittacosis, which is an avoidable infectious disease, has not been abolished in Germany, a general ban on all psittaceous birds is officially contemplated. Such a ban would mean the disappearance of every source of infection.

#### The Care of Premature Infants

Before the Berlin Pediatric Society, Dr. Körnig reported that at the Municipal Children's Hospital, Charlottenburg, excellent results in the care of premature infants have been obtained by careful observation, proper regulation of heating, sufficient isolation and a judicious dietary of relatively small quantities of breast milk. Of great importance for the prophylaxis of infection is the housing of the babies in single or double cubicles. Feeding is exclusively by means of the pipet or the bottle. The time from birth until the attainment of normal body weight is regarded as the period of standardization. During this period the precise amount of nutrition is scarcely considered except in connection with ability to ingest and the general condition. Artificial administration of hormones is deemed unphysiologic. Vitamin C is administered at an extremely early date; great emphasis is placed on the timely treatment of rickets. As to anemia, only the severe forms are treated with iron and intramuscular injections of blood. In the years from 1935 to 1938 the mortality among 143 premature infants amounted to 23.43 per cent; minus the number of babies dying within twenty-four hours after admission, 15.6 per cent.

According to Dr. Doxiades, the mortality among premature infants at Kaiserin Auguste Victoria-House was formerly more than 50 per cent. Even now among an annual accession of 200 premature infants the rate is still in the neighborhood of 50 per cent. Recent studies have revealed that from 3 to 6 per cent of all premature infants show themselves debilitated later in life. Other hospitals report similar figures.

Professor Opitz reports a mortality of some 50 per cent among premature infants of his clinic. Many of these babies succumb to pneumonia between the sixth and the eighth week, perhaps because this institution is without individual cubicles.

Of interest are the observations of Professor Bessau, the Berlin ordinarius of pediatrics. At the Children's Hospital of Berlin University a majority of premature infants die within the first twenty-four hours. Extremely careful necropsies have disclosed that fatal pneumonia among premature infants is usually an aspiration pneumonia. The incidence of this disorder can be reduced only by the strictest attention to feeding methods. The use of tiny feeding bottles is recommended. In Professor Bessau's opinion a risk inheres in any deviation from a breast milk regimen, namely any supplementary feeding. Sterilized breast milk is inferior to raw milk, even if the heating has been done with great care.

#### A New Form of Encephalitis in Germany

Since the epidemics of lethargic encephalitis which took place toward the end of the World War, the public has been disturbed time and again by outbreaks of certain acute inflammatory disorders of the central nervous system. Professor Pette, director of the Hamburg University Neurologic Clinic, has recently published a report on a new type of encephalitic disorder in which the anatomic lesions differ from those observed in any form of encephalitis hitherto observed in Germany. The disorder is characterized by remarkable anatomic changes and a unique clinical syndrome. Three cases, all fatal, were reported. The new form seems nearly identical with encephalitis japonica as well as with the epidemic which erupted in some American cities (St. Louis, Toledo, Kansas City) during 1933. Encephalitis japonica was first thoroughly described by the Japanese authors Kaneko and Aoki in 1928.



## AUSTRALIA

(From Our Regular Correspondent)

Aug. 2, 1938.

### New Zealand Practitioners Oppose Health Insurance

In New Zealand, as in Australia, medical practice is at the crossroads. The government is on the point of turning toward socialized medicine by way of compulsory national health insurance for every member of the community. Excellent as this may be for a country with a completely socialized economy, the scope of activity along these lines is strictly limited by financial considerations in any essentially capitalist economy. The New Zealand scheme, despite its enormous cost, provides only a universal general practitioner service.

The great majority of members of the profession are opposed to this scheme on scientific as well as on economic grounds. All are agreed that the promotion of health is a greater object than the treatment of sickness. Without wishing to underestimate the importance of curative medicine, it is felt that national health insurance, which is really a system of indemnification for sickness, does not (in the proposals put forward by the government) materially advance the greater object of the promotion of health. There are conditions in relation to environment, to conditions at work, to domestic help, to nutrition of the young, to preventive medicine and to research which are known to be unsatisfactory. It is felt that attention to these conditions would do far more for the people than the introduction of a costly system of health insurance. Further, the provision of a universal general practitioner service will do nothing toward remedying these deficiencies.

Again, the difficulty of workers in New Zealand is not so much the obtaining of ordinary medical attention in their homes and at consulting rooms as the provision for major illness, home nursing, hospitalization, specialist treatment and laboratory and radiologic investigation. These are the obstacles to complete medical service which the British Medical Association in New Zealand has sought to remove by means suggested in a plan previously submitted to the government, which implied the fixing of an income limit for beneficiaries.

Accurate diagnosis should be the most important function of the general practitioner, who first comes in contact with the patient. Diagnosis is the foundation of medical treatment, and all special diagnostic services should be available for his assistance; otherwise the general practitioner will become divorced from the most essential part of his professional duty. Unfortunately, the average patient is not conscious of the necessity for treatment to be based on accurate diagnosis, as witness the millions spent on "patent medicines." All he asks for is treatment, and under a panel system without auxiliary services treatment is certain to become empirical.

The introduction of a universal scheme abruptly changes the whole character of medical service, and the full consequence of so revolutionary an innovation cannot be foreseen. It involves changes in well rooted habits of the people and methods of the profession as well as the establishment of completely new economic relationship between the profession and the public. Practitioners in New Zealand see in the projected scheme a mistaken approach to the problem of raising the standard of health of the community. Furthermore, it appears to possess no appreciable advantage in the treatment of disease over what obtains at present.

### Malnutrition in New Zealand

There is in New Zealand a system of infant feeding which has gained exceptionally wide acceptance. It is more than twenty-five years since the late Sir Truby King introduced this method and it should now be possible to estimate its results in adult life, for by such results the Plunket system must ultimately stand or fall. In view of the League of Nations statement that defects due to improper feeding in early

life are often irreparable, even if followed by a period of proper feeding, the adequacy or otherwise of a system so universally applied becomes exceedingly important.

Dr. E. M. Spencer of Wellington, New Zealand, considers that the Plunket system is responsible for a considerable amount of underfeeding during infancy and thereby paves the way for a state of malnutrition in later years. He points out that, although the system has been in operation for a quarter of a century, the stature and physique of young adults in New Zealand compare unfavorably with those of a generation ago, that the incidence of dental caries in children and adolescents leads the world, and that the annual school statistics are monotonous in the regularity of the figure for malnutrition. During periods of prosperity and depression alike it has remained almost constant at 7 per cent. He has shown that malnutrition exists to an alarming and unsuspected extent in families in which it should least be expected, in homes where money is no object when it comes to providing good food in plenty, sunshine, fresh air and general care. In almost all such cases the children had been under the constant attention of a Plunket nurse. He contends that the most common fault in artificial feeding is the use of too dilute mixtures and that complete digestibility cannot make up for lack of caloric requirements. The use of formulas which are too low in their content of milk solids implies too low a protein intake. Further, he maintains that the weight curves to which New Zealand babies are expected to conform are too low and are in fact lower than those used in New York and London. Moreover, the Plunket system of feeding does not make sufficient allowance for the extra nutritional needs of babies destined to be above the average stature. Lack of adequate food brings poor physical condition and, along with this, lack of appetite. It is doubtful, therefore, whether a child ever makes up the leeway due to insufficient feeding during the first year, and at twelve months he is already a candidate for the group "malnutrition" when he reaches primary school.

Whether it is justifiable to infer that, hand in hand with a remarkable lowering of infantile mortality, the Plunket system is partly responsible for a state of malnutrition among children and young adults is a debatable question. Nevertheless, Dr. Spencer's observations remind us that the problem is not merely to save life during the perilous first year but to adopt those means which shall secure healthy growth and optimal development.

### Poliomyelitis in Australia

Since the outbreak of an epidemic of poliomyelitis in Victoria early in June 1937, a total of 2,081 cases has been reported with 106 deaths. This represents an occurrence of eleven cases to 10,000 of population, with a mortality rate of 5.1 per cent. In other states the epidemic has been less severe but with a higher rate of mortality. During the last three months the incidence has fallen almost to nonepidemic prevalence.

In view of the rather unusual character of the epidemic, particularly in the early stages, an isolation of the virus was made in order to establish that the infections were due to the usual type of virus. Burnet and Keogh, working at the Walter and Eliza Hall Institute, Melbourne, have reported that intracerebral inoculation of monkeys with material obtained from the spinal cords of several patients who died produced typical symptoms, with some variability in the incubation period. The virus is more readily transferred to the monkey than strains obtained in nonepidemic periods.

Monkeys that recovered after infection with the recently isolated strain are still partially susceptible to infection with the Rockefeller Institute MV strain, so that, although the virus responsible for the epidemic has significant antigenic resemblance to it, it is not identical with the classic MV strain of poliomyelitis virus.

## ITALY

(From Our Regular Correspondent)

July 30, 1938.

## Surgical Intervention in Appendicitis

Professor Santi recently reported before the Accademia medica "Filippo Pacini" of Pistoia thirty-four cases of acute appendicitis with circumscribed peritonitis on the first or fourth day of the disease. All of the patients recovered after medical treatment. Among fourteen patients who had acute appendicitis with diffuse peritonitis in which medical treatment was administered, five recovered. Among twelve patients suffering from a circumscribed abscess, the latter was spontaneously evacuated and reabsorbed in ten cases. In the early stage of acute appendicitis a prognosis as to the evolution of the disease cannot be made. There are no symptoms by which a plastic type of appendicitis can be differentiated from a perforating appendicitis. It is advisable to follow the old formula of operating whenever possible in the first hours of acute appendicitis. The mortality in these conditions is nil or slight.

## Etiology of Gastric Ulcer

Prof. Guido Manni, in a recent lecture before the army physicians in Trieste, discussed gastric and duodenal ulcers. The fact that, among large groups of persons living in the same climate and under the same standards of life, ulcer develops in only a few shows the lack of influence of external factors and the role of some individual factor. The importance of individual predisposition is shown by the frequency of the disease in persons of a lymphatic-chlorotic and anemic constitution. The psychic factor is important. Stefano found emotional conflicts present in thirty cases of gastric or duodenal ulcers which he observed. According to the speaker, the existence of familial gastric disease is of less importance than heredity of vagosympathetic disturbances, which are the predisposing factors for the development of gastric or duodenal ulcers in 25 per cent of the cases. The speaker found syphilis in 3 per cent of his cases. The vascular theory can be partially accepted only in association with the neurogenic one. It is believed that the gastric wall is attacked by the gastric juice only when the circulation of a particular area is disturbed. Generally ulcers occur in areas of the gastric mucosa which are in close contact with the gastric secretion, such as the small curvature and the pylorus. Ulcer frequently develops in patients suffering from hyperchlorhydria and increased peptic power of the gastric secretion, whereas it is rare in persons with normal gastric secretion, and exceptionally rare in hypopepsia. Hyperchlorhydria, although not indispensable for the development of ulcer, exists in 73 per cent of the cases. Disorders of the metabolism of cholesterol have been shown in gastric ulcer. Iarno found hypocholesterolemia in all cases of gastric ulcer. There is also an anaphylactic theory which is supported in Italy by Cesaris-Demel and in the United States by Shapiro and Ivy, who regard the ulcer as an Arthus phenomenon. The insufficiency of vitamins is also a theory. The speaker concluded that the development of gastric ulcer cannot be explained by any of the known theories.

## Society Reunion

The Società piemontese of surgery recently met at Turin with Professor Uffreduzzi presiding. Professor Bobbio spoke on sacrococcygeal cordoma. His patient, aged 54, had an operation in 1929 for the removal of a tumor of the sacrococcygeal cavity. Microscopic study of the tumor showed a typical cordoma which recurred in 1933 in a gluteus and in 1938 in the scar on the buttock. The speaker said that sacrococcygeal cordoma is malignant and of a reserved prognosis. The tumor has a tendency to recur in the same place in which it appears at first, and also to produce metastases. The tumor is not sensitive to roentgen irradiations.

Professors Filocchi and Buisson spoke on late results of cholecystostomy. The operation enables the surgeon, by means of introduction of opaque substances, to ascertain whether or not the draining system of the biliary tract is opened. Cholecystostomy was done, from 1932 to 1936, at the surgical clinic of Turin in thirty-six cases. The five patients in the group who had hepatitis died. Of the remaining thirty-one, five died some time after the operation from an intercurrent disease. Thirteen had no more complaints. Recurrence took place in ten patients, six of whom had a second operation.

## Articular Fractures in War

A combined session of the Accademia Medica and the Accademia Lancisiana was held at Rome. The participants were prominent surgeons of the capital who are also veterans of various military campaigns. Surgeon General Professor Caccia called attention to the need for better organized treatment of articular fractures incurred in war. The author stressed the numerical importance of injuries of this type. They represent about 25 per cent of all curable war wounds. He then discussed the possibility of cure and proposed that in future the medical corps should be better prepared to treat such injuries both through improved special technicosurgical equipment and a better training of surgeons. At the conclusion of Professor Caccia's address the academies voted the following recommendations: 1. The military authorities should see to it that all military hospital units specializing in the treatment of articular fractures are provided with the most modern equipment and that the surgeons in charge are specially trained in traumatology. 2. All patients with articular fractures, after emergency treatment at the aid stations, should be quickly evacuated to the special hospitals. 3. Sixth year medical students should be required to pass a final examination in a theoretical and practical course in emergency treatment of war wounds, to be given at the premilitary school.

## The Therapy of Pneumonia

In the general assembly of the Italian sections on general medicine, which met at Milan to discuss the therapy of pneumonia, it was formally recommended that all health authorities should take an active part in the improvement of present conditions by advocating measures which would facilitate the early diagnosis of pneumonia and hastening the use of specific serotherapy. The national health authorities should find means to assure an ample supply of the required serums.

## Marriages

HENRY MURFREE CARNEY, Murray, Ky., to Miss Enid Lee Lindenberg of Nashville, Tenn., at Harbor Springs, Mich., recently.

LEWIS ELLSWORTH HEDGECOCK, Hampton, Iowa, to Miss Pauline Davis of Estherville, July 12, in Nowata, Okla.

WILLIAM NORTH DAWSON, Murfreesboro, Tenn., to Miss Mary Frances Monroe of Russellville, Ky., in June.

ROBERT SAMUEL MOSLEY, Miami, Fla., to Miss Elizabeth Stucky of Pahokee, July 10, at Asheville; N. C.

MALCOLM SHIELDS DICKSON, Oakboro, N. C., to Miss Frances Elizabeth Boyette of Ahsokie, July 23.

GEORGE GARDNER DURST, Cincinnati, to Miss Mary Elizabeth Watts of Columbia, S. C., in June.

EVERETT MANSHIP HARRISON, Dunedin, Fla., to Miss Mamie Lou Sharpe in Clearwater, August 8.

HAROLD WRIGHT MUECKE, Macon, Ga., to Miss Marian Hawk of Rimersburg, Pa., June 11.

CLYDE WILSON COLLINGS, New York, to Miss Mary Ann Foley of Portland, Maine, July 21.

ROBERT CLEMENTS to Miss Eunice Tanner, both of Danville, Ill., in Champaign, August 4.

MAURICE JOSEPH COSTELLO to Miss Margaret Therese Moore, both of New York, July 30.

## Deaths

**John Levy**, New York; McGill University Faculty of Medicine, Montreal, Que., Canada, 1926; member of the American Psychiatric Association and the American Orthopsychiatric Association; associate clinical professor of psychiatry at the Columbia University College of Physicians and Surgeons; psychologist to the Canadian National Hygiene Clinic, 1922-1923; clinical assistant to the psychiatric clinic, Royal Victoria Hospital, Montreal, 1925-1926; assistant physician to the Manhattan State Hospital, New York, and clinical assistant, mental hygiene clinic, Bellevue Hospital, 1926-1927; psychiatrist, Institute of Juvenile Research, Chicago, Judge Baker Foundation, Boston, and child guidance clinic, Cleveland, 1927-1928; chief, child guidance clinic, department of psychiatry, Columbia University since 1930; aged 41; died, July 11, in the Beth Israel Hospital, Boston, of chronic interstitial nephritis.

**Felix Percy Chillingworth**, Boston; Yale University School of Medicine, New Haven, 1907; assistant professor of physiology at the University of Kansas School of Medicine, Lawrence, 1912-1914; assistant professor of physiology and pharmacology at Tulane University of Louisiana School of Medicine, New Orleans, 1913-1920; professor of pharmacology at the Tufts College Medical School; fellow of the American College of Physicians and the American Association of Anatomists; physiologist to the Forsyth Dental Infirmary; aged 55; died, June 30.

**Charles Fremont Dight**, Minneapolis; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1879; formerly health officer of Holton, Mich.; at one time assistant to the professor of pathology and the practice of medicine and clinical medicine and secretary of the faculty, University of Michigan Medical School, Ann Arbor, and instructor in pharmacology and lecturer in pharmacology and materia medica, University of Minnesota Medical School; aged 81; died, June 20, in the Franklin Hospital of coronary disease and arteriosclerosis.

**Joseph Aloysius Lanahan** @ New York; Albany (N. Y.) Medical College, 1899; at one time instructor in dermatology at his alma mater; served during the World War; superintendent of the New York City Hospital, Welfare Island; formerly superintendent of the Lincoln Hospital, Morrisania City Hospital and the psychiatric division, Bellevue Hospital, New York, and the Kings County Hospital, Brooklyn; aged 65; died, June 2, of coronary thrombosis.

**Claude Edward Cooper** @ Denver; Gross Medical College, Denver, 1900; professor of otolaryngology at the University of Colorado School of Medicine; member of the American Academy of Ophthalmology and Oto-Laryngology and the American Laryngological, Rhinological and Otological Society; veteran of the Spanish-American War; aged 59; on the staff of the Mercy Hospital, where he died, June 21, of pulmonary tuberculosis.

**Claude Marion Bloss** @ Okemah, Okla.; University of Texas School of Medicine, Galveston, 1908; secretary-treasurer and past president of the Oklahoma County Medical Society; county superintendent of health; formerly member of the school board; served during the World War; on the staff of the Clinic Hospital; aged 60; died, June 14, in the Okmulgee (Okla.) Hospital following an operation for intestinal obstruction.

**Charles C. Stephenson**, Los Angeles; Kentucky School of Medicine, Louisville, 1889; veteran of the Spanish-American War; at one time professor of ophthalmology, College of Physicians and Surgeons, Little Rock, Ark.; past president of the Arkansas Medical Society; formerly on the staff of the Arkansas State School for the Blind, Little Rock; aged 74; died, June 12, of lobar pneumonia and chronic myocarditis.

**George Lally Curran** @ North Adams, Mass.; University and Bellevue Hospital Medical College, New York, 1911; fellow of the American College of Surgeons; served during the World War; surgeon to the North Adams Hospital; member of the associate staff of St. Luke's Hospital, Pittsfield, and consulting surgeon to the W. B. Plunkett Memorial Hospital, Adams; aged 50; died, June 30, of cerebral hemorrhage.

**Charles Dudley Eldred** @ Joliet, Ill.; Northwestern University Medical School, Chicago, 1914; fellow of the American College of Surgeons; served during the World War; past president of the Will-Grundy County Medical Society; sur-

geon to St. Joseph's and Silver Cross hospitals; aged 51; died, June 25, in St. Luke's Hospital, Chicago, of cholelithiasis, common duct stone and acute pancreatitis.

**John Horn**, New York; University of the City of New York Medical Department, 1885; member of the Medical Society of the State of New York and the American Laryngological, Rhinological and Otological Society; fellow of the American College of Surgeons; formerly on the staff of the Lenox Hill Hospital; aged 82; died, June 12, of arteriosclerosis.

**Carl Philip Schoen** @ New Albany, Ind.; University of Louisville (Ky.) School of Medicine, 1926; fellow of the American College of Surgeons; clinical associate in gynecology at his alma mater; on the staff of St. Edward's Hospital; aged 36; died, June 9, in the New England Deaconess Hospital, Boston, following an operation for tumor of the brain.

**William Martin Hill**, Noank, Conn.; University of Virginia Department of Medicine, Charlottesville, 1897; member of the Connecticut State Medical Society; past president of the New London County Medical Society; on the staff of the Home Memorial Hospital, New London; aged 69; died, June 8, of coronary thrombosis.

**Beverley Tucker** @ Colorado Springs, Colo.; University of Virginia Department of Medicine, Charlottesville, 1889; fellow of the American College of Surgeons; attending obstetrician to the Glockner Hospital; member of the staff of the Beth-El General Hospital; aged 71; died, June 2, of coronary thrombosis.

**Floyd Nicholson Shipp**, Goodrich, Texas; Central College of Physicians and Surgeons, Indianapolis, 1903; member of the State Medical Association of Texas; served during the World War; at one time a member of the U. S. Public Health Service; aged 59; was killed, June 15, in an automobile accident.

**Ross Chauncey Whitman**, Boulder, Colo.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1899; formerly secretary and professor of pathology at the University of Colorado School of Medicine, Denver; aged 65; died, June 5, in the Community Hospital of coronary thrombosis.

**James Andrew Bline** @ Yakima, Wash.; Chicago College of Medicine and Surgery, 1910; member of the Pacific Coast Oto-Ophthalmological Society; on the staffs of St. Elizabeth's Hospital and the Yakima County Hospital; aged 60; died, June 21, of pneumococcal septicemia.

**William Percival Ross**, Battle Lake, Minn.; University of Manitoba Faculty of Medicine, Winnipeg, 1923; member of the Minnesota State Medical Association; medical superintendent of the Otter Tail County Sanatorium; aged 45; died, June 25, of coronary thrombosis.

**Warren Coleman** @ Troy, Ohio; Medical College of Ohio, Cincinnati, 1888; fellow of the American College of Surgeons; chairman of the county board of health; on the staff of the Stouder Memorial Hospital for many years; aged 72; died, June 11, of chronic myocarditis.

**Frank Edwin Tasker**, West Acton, Mass.; Dartmouth Medical School, Hanover, N. H., 1893; member of the Massachusetts Medical Society; for many years a member of the board of health; aged 74; died, June 19, of arteriosclerosis and chronic endocarditis.

**Winborne Dewey Evans** @ Camden, N. J.; Jefferson Medical College of Philadelphia, 1925; on the staff of the Cooper Hospital; aged 38; died, June 26, in the Zurbrugg Memorial Hospital, Riverside, of a skull fracture received in an automobile accident.

**Charles J. Ennis**, Sault Ste. Marie, Mich.; Schools of Surgery, Royal College of Surgeons in Ireland, Dublin, 1874; member of the Michigan State Medical Society; past president of the Upper Peninsula Medical Society; aged 88; died, June 11, of myocarditis.

**James Walter Allen**, Rutherford, Tenn.; University of Nashville (Tenn.) Medical Department, 1900; member of the Tennessee State Medical Association; bank president; aged 64; died, June 2, in the Baptist Hospital, Memphis, of coronary occlusion.

**Albert Claire Gray**, Keokuk, Iowa; Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1908; member of the Iowa State Medical Society; on the staffs of the Graham and St. Joseph's hospitals; aged 55; died, June 15, of angina pectoris.

**Rollin Schwartz**, Chippewa Falls, Wis.; Hahnemann Medical College and Hospital, Chicago, 1904; member of the State

Medical Society of Wisconsin; on the staff of the Chippewa County Chronic Insane Asylum; aged 58; died, June 16, of arteriosclerosis.

George P. Pennington, Atlantic City, N. J.; Jefferson Medical College of Philadelphia, 1909; for many years on the staff of the Atlantic City Hospital; aged 53; died, June 29, of cerebral hemorrhage, arteriosclerosis, heart disease and hypertension.

Daniel S. Rice @ Ebensburg, Pa.; Cincinnati College of Medicine and Surgery, 1884; fellow of the American College of Surgeons; was a member of the local examining board during the World War; aged 78; died, June 18, of myocarditis and endocarditis.

Austin Keeler Van Dusen @ Chicago; Northwestern University Medical School, Chicago, 1923; clinical assistant in pediatrics at his alma mater, 1930-1933; on the staff of the Illinois Masonic Hospital; aged 39; died, June 22, of coronary occlusion.

George Lawrence Stevenson, Sacramento, Calif.; University of California Medical Department, San Francisco, 1899; member of the California Medical Association; aged 67; died, June 24, of carcinoma of the lip with metastasis to the lungs and liver.

Nathaniel J. Pickett, Milford, Texas; University of Tennessee Medical Department, Nashville, 1892; member of the State Medical Association of Texas; past president of the Ellis County Medical Society; aged 70; died, June 20, of uremia.

Silas Sanford, Palmyra, Mo.; Bellevue Hospital Medical College, New York, 1886; member of the Missouri State Medical Association; past president of the school board; aged 78; died, June 25, in Rochester, Minn., of carcinoma of the stomach.

Chester Earl Myers, North Freedom, Wis.; University of Nashville (Tenn.) Medical Department, 1911; member of the State Medical Society of Wisconsin; aged 55; died, June 29, of pneumonia, coronary disease, hypertension and nephritis.

Foy Clawson Payne @ Dayton, Ohio; University of Cincinnati College of Medicine, 1917; member of the American Society of Clinical Pathologists; on the staffs of St. Elizabeth and Good Samaritan hospitals; aged 43; died, June 15.

Annetta Ayers Saunders @ Chicago; National Homeopathic Medical College, Chicago, 1896; Harvey Medical College, Chicago, 1897; Dunham Medical College, Chicago, 1899; aged 76; died, June 20, of chronic myocarditis and nephritis.

David C. Homan, Oglesby, Texas; Baylor University College of Medicine, Dallas, 1908; member of the State Medical Association of Texas; past president of the Coryell County Medical Society; aged 55; was shot and killed, June 4.

Benjamin F. Harden @ Wellsburg, W. Va.; Jefferson Medical College of Philadelphia, 1881; past president of the Brooke County Medical Society; bank president; aged 81; died, June 2, of carcinoma of the pancreas.

Robert Lee Riley, New Orleans; Tulane University of Louisiana School of Medicine, New Orleans, 1884; aged 75; died, June 21, in the Mercy Hospital of shock and hemorrhage following an operation for abdominal cyst.

John Henry Belt, Merritt Island, Fla.; Bellevue Hospital Medical College, New York, 1867; Civil War veteran; aged 94; died, June 21, in the Veterans Administration Facility, Bay Pines, of uremia and nephrosclerosis.

Dayton Davis Stone @ Detroit; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1910; on the staff of the Highland Park General Hospital; aged 50; died, June 29, of coronary thrombosis.

Daniel Vincent O'Donnell @ Bennington, Vt.; University of Vermont College of Medicine, Burlington, 1904; on the staff of the Henry W. Putnam Memorial Hospital; aged 58; died, June 18, of heart disease.

Jesse Johnson Willingham @ State Sanatorium, Ark.; Rush Medical College, Chicago, 1897; on the staff of the Arkansas Tuberculosis Sanatorium; aged 71; was accidentally drowned, June 30, while fishing.

Edward Maupin Gayle, Portsmouth, Va.; University of Virginia Department of Medicine, Charlottesville, 1902; formerly on the staff of the Parrish Memorial Hospital; aged 60; died, June 22, of heart disease.

J. W. Robinson, Medford, Ore.; Willamette University Medical Department, Portland, 1878; formerly mayor of Jacksonville; aged 88; died, June 23, in the Community Hospital of pulmonary edema.

Lewis Edward Kelly, Berkeley, Calif.; Hahnemann Medical College of Philadelphia, 1876; Civil War veteran; aged 94; died, June 4, of bronchial pneumonia, arteriosclerosis and chronic myocarditis.

Frank Victor Johnson @ Maquoketa, Iowa; Bennett College of Eclectic Medicine and Surgery, Chicago, 1897; aged 68; died, June 2, in the Finley Hospital, Dubuque, of carcinoma of the lung.

Clinton Elmer Hunter, Jennings, La.; Chicago Homeopathic Medical College, 1901; aged 72; died, June 1, in a hospital at Lake Charles of carcinoma of the cecum and ascending colon.

Charles Bruce Walls, Chicago; Chicago Homeopathic Medical College, 1894; aged 81; died, June 24, in the Veterans Administration Facility, Hines, Ill., of bilateral pyelonephritis.

Najib Nassif Sallume, Toledo, Ohio; Baltimore Medical College, 1896; member of the Ohio State Medical Association; aged 69; died, June 30, of coronary occlusion and vascular sclerosis.

Solon L. Coleman, Uniontown, Ala.; Tulane University of Louisiana School of Medicine, New Orleans, 1898; aged 64; died, June 4, in a hospital at Selma, of cerebral hemorrhage.

Oscar Lee Bailey @ Ocean Springs, Miss.; St. Louis College of Physicians and Surgeons, 1892; for many years bank president; aged 68; died, June 21, of carcinoma of the pancreas.

Juba Everett Pickering, Brooklyn; College of Physicians and Surgeons, Baltimore, 1908; served during the World War; aged 58; died in June as the result of slashing his wrists.

Milton Louis Brenner @ Houston, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1918; aged 45; died, June 21, of uremia and heart disease.

Louis Bartholomew Niquette, Northampton, Mass.; University of Vermont College of Medicine, Burlington, 1880; aged 80; died, June 16, of chronic myocarditis.

Dominic P. Thill @ Milwaukee; Milwaukee Medical College, 1900; aged 67; died, June 8, in St. Joseph's Hospital of coronary occlusion, myocarditis and hemiplegia.

Moses Malcolm Knoller, Brooklyn; Long Island College Hospital, Brooklyn, 1909; member of the Medical Society of the State of New York; aged 51; died, May 23.

Burton George Mead Robinson, Washington, D. C.; Howard University College of Medicine, Washington, 1911; aged 58; died, June 5, of gastric carcinoma.

Byron N. E. Spees, Glenns Valley, Ind.; Central College of Physicians and Surgeons, Indianapolis, 1891; aged 70; died, May 4, in St. Francis Hospital, Beech Grove.

Frank E. Wilson, Jeffersonville, Ohio; Hahnemann Medical College and Hospital of Philadelphia, 1891; aged 70; died, June 7, in St. Paul of cerebral hemorrhage.

Fannie Kimball Fiester, Austin, Minn.; Woman's Medical College, Chicago, 1891; Hahnemann Medical College and Hospital, Chicago, 1893; aged 71; died, May 6.

Stanley O. Newcomb @ Ida, Mich.; Detroit College of Medicine, 1904; veteran of the Spanish-American War; aged 61; died, June 27, of coronary thrombosis.

William Allen Cathcart, Wallaceburg, Ont., Canada; University of Toronto Faculty of Medicine, 1915; aged 46; was killed, June 7, in an automobile accident.

Harriet E. Adams, Horton, Kan.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1894; aged 71; died, June 15, of myocarditis.

Luzerne Coville, Arlington, Va.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1889; aged 72; died, June 23.

Charles F. Otis Sr., Rochester, N. Y.; Hahnemann Medical College and Hospital, Chicago, 1882; aged 78; died, June 12, at his home in Honeoye Falls.

James Michael Glynn, Chicago; Rush Medical College, Chicago, 1892; member of the Illinois State Medical Society; aged 71; died, July 3, of uremia.

William Everett Long, Buffalo; Homeopathic Hospital College, Cleveland, 1880; aged 79; died, June 8, in the Millard Fillmore Hospital of uremia.

William James Kerr, Oakland, Calif.; University Medical College of Kansas City, 1900; aged 59; died, June 11, of coronary thrombosis and diabetes.

Willis Isaac Purdy @ Middletown, N. Y.; University of the City of New York Medical Department, 1882; aged 84; died, June 5, of arteriosclerosis.

Clayton P. House, Oroville, Wash.; University of Vermont College of Medicine, Burlington, 1881; aged 80; died, June 13, in a hospital at Medical Lake.

Johann Hermann Meyer, San Bernardino, Calif.; Jefferson Medical College of Philadelphia, 1901; served during the World War; aged 60; died, June 26.

William Jackson Bolton, Washington, D. C.; College of Physicians and Surgeons, Baltimore, 1892; aged 67; died, June 18, in the Casualty Hospital.

Lemuel E. Davies, Miami, Fla.; Hahnemann Medical College and Hospital of Philadelphia, 1896; aged 69; died, June 16, of cerebral hemorrhage.

Edgar Gilmore Givhan @ Montevallo, Ala.; Medical College of Alabama, Mobile, 1894; aged 67; died, June 3, of carcinoma of the prostate.

John T. Barnett, Jonesboro, Ind.; Kentucky School of Medicine, Louisville, 1882; aged 80; died, June 30, of chronic myocarditis and nephritis.

Clarence Winfield Pierce Foss @ Brunswick, Maine; Medical School of Maine, Portland, 1895; aged 68; died, June 22, of coronary occlusion.

John C. Travers, Baltimore; University of Maryland School of Medicine, Baltimore, 1895; aged 65; died, June 11, of coronary thrombosis.

George Ignatius Lythcott, Tulsa, Okla.; Boston University School of Medicine, 1913; served during the World War; aged 52; died, May 1.

Thomas I. Marks, Halsey, Ore.; University of Oregon Medical School, Portland, 1896; aged 67; died, June 16, of coronary thrombosis.

Oscar F. Plummer, Macon, Ill.; St. Louis College of Physicians and Surgeons, 1903; aged 67; died, June 14, of cerebral hemorrhage.

William Everett Jonah, Atlantic City, N. J.; Medical School of Maine, Portland, 1900; aged 64; died, June 8, of coronary occlusion.

Wilfred Kennedy Keith @ Creston, Iowa; Rush Medical College, Chicago, 1894; aged 66; died, June 30, in Los Angeles, of angina pectoris.

Joseph Hooker Callbreath, Encanto, Calif.; Long Island College Hospital, Brooklyn, 1890; aged 74; died, June 2, of cerebral softening.

George Stewart Allen, Mackinaw, Ill.; Rush Medical College, Chicago, 1902; also a dentist; aged 70; died, May 5, of heart disease.

Annie Amelia Backus, Port Rowan, Ont., Canada; Hahnemann Medical College and Hospital, Chicago, 1889; aged 75; died, June 16.

Albert I. Babendreer, Ocean Springs, Miss.; Pulte Medical College, Cincinnati, 1899; aged 70; died, June 20, of mediastinitis.

Harrison Thomas Healy, New Bedford, Mass.; Baltimore Medical College, 1907; aged 55; died, June 1, of chronic myocarditis.

H. A. J. Watkins, Magee, Miss.; University of Louisiana Medical Department, New Orleans, 1883; aged 85; died, May 7, in Jackson.

James B. Nash, University City, Mo.; St. Louis College of Physicians and Surgeons, 1901; aged 63; died, June 14, of nephritis.

Charles Edward Gardiner, Brooklyn; Long Island College Hospital, Brooklyn, 1899; aged 61; died, June 15.

Walter Lee Dodson, Reform, Ala.; Medical College of Alabama, Mobile, 1906; aged 59; died, June 16.

George H. Harbarger, Coalton, Ohio; Ohio Medical University, Columbus, 1893; aged 66; died, June 17.

Burley Carl Bain, Bentonville, Ark. (licensed in Arkansas); aged 68; died, June 16, of myocarditis.

Frederick Winnett, Toronto, Ont., Canada; Trinity Medical College, Toronto, 1886; died, June 16.

Pinekey K. Carson, Hohenwald, Tenn. (licensed in Tennessee in 1889); aged 82; died, May 20.

Junius M. Armstrong, Garland, Texas; Dallas Medical College, 1903; aged 56; died, May 25.

Erastus A. Tuttle, Englewood, Colo. (licensed in Colorado in 1900); aged 89; died, June 28.

Oscar Louis Lennard, Atoka, Okla. (licensed in Oklahoma in 1935); aged 60; died, June 17.

## Bureau of Investigation

### A FRAUDULENT GALLSTONE CURE

#### The Home Drug Company of Minneapolis Declared a Fraud and Debarred from the Mails

A Minnesota quack, one Bert Victor Lares, M.D., has for some years conducted a fraudulent medical mail-order business known as the Home Drug Company. In spite of the fact that the Food and Drug Administration in 1935 prosecuted and fined Lares' company and declared his "gallstone cure" a fraud, and in spite of the further fact that in 1936 the Federal Trade Commission proceeded against the Home Drug Company, the business continued until November 1937, at which time the Post Office Department issued a fraud order against the Home Drug Company and its officers and agents.

B. V. Lares, according to the records of the American Medical Association, was born in New Hampton, Iowa, in 1874 and holds a diploma from the University of Minnesota College of

## GALL STONE COLIC

### Doctor's Private Prescription Gives Marvelous Results



**SHE WANTS OTHER  
WOMEN TO KNOW  
HER COMFORT**

"After suffering for seven years with gall bladder and liver trouble and having tried several different kinds of medicine without relief I was told to have an operation. I did not want one until I had tried everything for gall stone trouble. My aunt recommended your Prescription No. 69, and after the first bottle I felt a great change. Since taking the treatment, words cannot express how thankful I am. I am telling this for the benefit of other sufferers. If you want relief, get this doctor's prescription. It will save you money and give you new life."

Avoid operations. Treat the cause in a sensible, painless, inexpensive way at home with a recognized practicing specialist's prescription for liver, gall bladder and stomach trouble which have given gratifying results for 28 years. Write for Free Literature to

**HOME DRUG CO.,**  
18-P N. 4th St., Minneapolis, Minn.

Homeopathic Medicine and Surgery, issued in 1900. For some reason not clear, the state of Minnesota granted Lares a license to practice medicine in 1897—three years before he is shown to have received his diploma. The medical directories show Lares in St. Paul in 1900, in Maple Plain, Minn., in 1902 and 1904, in Delano, Minn., from 1906 until 1918, and at Minneapolis from 1921 to date.

The Home Drug Company was started in 1926 by Lares and a former advertising man, one D. A. Lundy. Each put in \$100 to start the company. Four years later, in 1930—so profitable is mail-order quackery—the enterprise was incorporated under the laws of South Dakota with a capitalization of \$100,000, the stock, according to the report of the Post Office Department, being held by Lares and Lundy and their respective wives! Lares was president of the concern and Mrs. Lares vice president, while Lundy was secretary-treasurer and advertising manager. Lares' scheme was to advertise that he had a cure for gallstones, a medicine that he called "Prescription No. 69" and which, he declared, would "dissolve" gallstones. In his advertisements he also declared that Prescription No. 69 was the prescription of a physician who had for years specialized in gallbladder disease.

During the hearing at Washington, Lares testified that he took a three year homeopathic course in the University of Minnesota College of Homeopathic Medicine and Surgery,



although he admitted that he had never been graduated by a high school. Lares' evidence at the hearing demonstrated that the man was in no sense of the word a specialist in diseases of the liver and gallbladder and that such few cases of that kind as he had were quite incidental to the general practice in which he had been engaged. In 1917 Lares secured a commission as first lieutenant in the Medical Corps of the United States Army and served therein, without reaching the front, for a period of about eighteen months, during the course of which he was advanced to a captaincy. He admitted that he did not treat a single case of gallstones during this period but that his duties consisted of training stretcher-bearers, performing vaccinations and inoculations, prescribing for constipation, and so on.

In 1919 Lares again entered general practice, this time in Minneapolis. In 1921 Minneapolis and St. Paul papers reported that Lares had been arrested following the death of a 21 year old girl who was said to have died from peritonitis following an alleged illegal operation. Lares was later released, according to the Post Office report. On a later date Lares was again arrested, found guilty and fined on charges of "compounding without a registered pharmacist."

The memorandum of Judge Karl A. Crowley, Solicitor for the Post Office Department, to the Postmaster General, recommending the issuance of a fraud order, shows that while the Home Drug Company was prosecuted in September 1935 under the National Food and Drugs Act for making fraudulent therapeutic claims for its Prescription No. 69, found guilty and fined \$50, and while in February 1936 the Federal Trade Commission ordered the Home Drug Company to cease representing that Prescription No. 69 was an effective remedy for gallstones, nevertheless the Home Drug Company continued to advertise that its "patent medicine" would cure gallstones. The explanation may lie in the further fact that the evidence in the case also showed that the receipts of the Home Drug enterprise at the time of the hearing approximated \$27,000 annually!

As an interesting sidelight, Lares was said to have testified at the hearing that, since the company had been formed, it had expended large sums for attorneys' fees "in an effort to avoid adverse action by the Federal Trade Commission and other governmental agencies." It is a well known fact that it is not uncommon for men who, having previously as government officials had to prepare cases against fraudulent mail-order concerns later would leave the government service and set up as "experts" in dispensing information—for a fee—which would show concerns how to skate on as thin ice as possible without breaking through.

When "Prescription No. 69" was analyzed by the federal chemists in preparation for the case of the Food and Drug Administration against the Home Drug Company, the chemists reported that the stuff "consisted essentially of glycerin, with small proportions of oxgall and bile acids." According to the alleged formula furnished by Lares to the Post Office Inspector, Prescription No. 69 contained very small quantities (homeopathic?) of chelidonium, chionanthus, cinchona, colocynth, dioscorea, hydrastis, iris, leptandra, podophyllum, bile salts and strychnine. Lares' concern also put out a pill that it called "Laxative Triangles" and which contained phenolphthalein, bile salts and cascara.

While Lares' lawyers contended that the Home Drug Company treatment was "based on homeopathy," the facts were that it was the veriest mongrel—neither homeopathic nor scientific in character. According to Lares' testimony, his idea in mixing up his medicines was "to put all possible remedies that his patients would likely be needing later into a single mixture." He based this on the interesting, if not convincing, theory that "only the drug particularly indicated would act at a given time and that, when the indications for that particular substance had passed, its action would cease and the other drugs in the preparation would thereon rotate and come into play successively as needed." Thus Lares, in order to justify his quackery, endowed his conglomerate mixture of homeopathic and other drugs with more than human intelligence. At the time of the hearing Lares was asked why, if his theory was good, it would not be simpler

to make a mixture of all the drugs in the homeopathic armamentarium, so that every disease imaginable could be properly treated as the occasion arose! Lares opined, however, that such a pill would "take too much room" and characterized the inquiry as "traveling into the ridiculous." It obviously depended on whose ox was gored.

Lares testified at the hearing also that his so-called treatment was directed solely to the "symptoms" of gallstones and other ailments so fluently described in his advertising, and he volunteered that, when prescribing homeopathically, "I don't care whether it is cirrhosis of the liver or ingrowing toe-nails."

On November 15 Judge Crowley declared that the evidence showed the business of the Home Drug Company to be a scheme for obtaining money through the mails by means of false and fraudulent pretenses, representations and promises, and recommended that a fraud order be issued. On November 17 Postmaster General Farley issued the fraud order.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### DANDRUFF

To the Editor:—What is considered the most efficient method for the treatment of dandruff? H. F. SCHROEDER, M.D., Marinette, Wis.

ANSWER.—Dandruff is the popular name for fine exfoliation that occurs in seborrhea sicca of the scalp. Once the disease is arrested, it usually requires continued attention over a further period to prevent recurrence.

The scalp should be kept clean by washing with soap and water sufficiently often to keep it clean. The more oily the scalp, the more frequently should it be washed. No more definite rule for frequency can be framed. The average man's scalp may be safely washed every week and many as often as twice a week or oftener. Frequently an accompanying itching of the scalp yields to mere washing. For severe seborrhea with crusting, oil cleansings are more satisfactory.

If there are any indications for systemic treatment, these, of course, should be met. An anemia may require iron or liver; an imperfect digestion needs attention; and always the bowels should be regularized.

Of the many local remedies for seborrhea of the scalp, not one is more useful than sulfur. It is best used in the form of a pomade, at least at the beginning of treatment. Wool fat, lard, petrolatum or cold cream may be used by themselves or in combination as bases. They can be softened by the addition of oil. The objections to their use is that they grease the hair excessively and they do not wash easily from the scalp. Usually the patient applies too much material, more than is necessary, and is careless in getting it on the hair. An oil shampoo before the use of soap and water facilitates removal. There are more elegant menstruums on the market in the form of oils, but these cost more and are not essential. Sulfur may be used in the form of solution of sulfated lime (Vlemingck's solution) diluted to fit the circumstances. In the beginning the scalp can accommodate a mixture of one part of the solution to seven of water. This can later be given less diluted and a few can stand a full strength solution. It is best applied with a medicine dropper before retiring, less often when the scalp condition is improved.

Mercury in various forms is excellent. The official ammoniated mercury ointment may be used or mixed with an equal or twice its quantity of base. Mercury bichloride is excellent in lotions. It may be used in the proportion of 1 in 1,000 to 1 in 10,000. The addition of salicylic acid and resorcinol increase the value of these lotions. Resorcinol should not be used on blond or red hair.

Ultraviolet rays are sometimes useful for seborrhea of the scalp. It is not necessary to produce an erythema. The scalp should be washed before exposures to facilitate the penetration of the rays. Massage has been lauded by some as improving the circulation of the scalp, but its capacity for good is doubtful.

#### ANGIOMA OR CIRSOID ANEURYSM OF SCALP

*To the Editor:*—A woman aged 35, in good health, has for the last twelve years had hemorrhages from the scalp just above and in back of the left ear. These hemorrhages have been profuse and were easily stopped by coagulation of the bleeding point by means of diathermy. Since the last coagulation several weeks ago, the posterior auricular artery has dilated considerably from a point midway between the cartilage of the ear and the left mastoid. This dilatation is more pronounced as it proceeds up to the scalp. There is redness of the skin underlying the distal part. Pulsations are not only easily felt but easily seen. At times the patient feels as though there were a veil passing over the left eye, but this is only momentarily. Would it be wise to ligate this vessel at its origin or between the mastoid and cartilage of the ear? M.D., Wisconsin.

**ANSWER.**—The changes in the skin, the dilatation of the posterior auricular artery and the location of the diseased area suggest a diagnosis of some easily bleeding tumor such as an angioma or a cirsoid aneurysm. The latter occurs on occasion in the scalp in this area.

Raymond W. McNealy has written an excellent article on aneurysms of this nature in Dean Lewis's Practice of Surgery (Hagerstown, Md., Prior & Co., 1932, vol. 12, chapter 5, section 4, pp. 101-157). It would appear that the condition is due to an abnormal communication between veins and arteries. This may take place in a number of different ways and from different causes such as from a nevus or telangiectasis, from a deep congenital anomaly of the blood vessels (deep nevus), from a single severe trauma, or from a number of minor traumas.

There is present in these tumors a tortuous mass of dilated vessels beneath the scalp. The overlying skin is congested and there is not only a thrill but an auscultatory murmur. Spontaneous bleeding such as described is not often a symptom. There are many procedures aimed at cure. McNealy states that a modern standard procedure would be more or less as follows: (1) ligation of the external carotid artery, (2) ligation of the secondary trunks such as the temporal, occipital and auricular arteries, (3) ligation of the main trunks at the edge of the mass, and (4) extirpation of the mass following its reduction in size because of the procedures listed.

The information given does not enable an accurate diagnosis, but it would appear that cirsoid aneurysm is a likely cause of the difficulty. There is another possibility and that is a traumatic aneurysm due to a weakening of the wall of the artery following diathermy.

In this case ligating the artery distally and proximally to the dilatation would probably be sufficient to end the difficulty. Radiation therapy is not apt to succeed if the vessels involved are large. Injection therapy has been largely abandoned.

The cause of the original hemorrhages over a period of years from the scalp remains obscure in the absence of more detailed information.

#### HERNIA DEVELOPING IN ATHLETE

*To the Editor:*—A physician aged 53, a former athletic director, performed many heavy athletic duties, including wrestling and heavy lifting, up to several years ago. While he was lifting a heavy object about a week ago an inguinal hernia occurred. Could there be an inherited weakness in this region? If so, how could he have performed for many years such strenuous athletic work without any such occurrence? The hernia is small and not troublesome to any extent. What treatment is advisable? S. A. KLEGER, M.D., Astoria, Ore.

**ANSWER.**—The development of an indirect inguinal hernia is usually due to the failure of obliteration of the peritoneal process extending to or in continuity with the processus vaginalis of the testicle. At times this patency is limited to a slight funnel shaped dimpling of the peritonum at the internal ring which is fixed by the obliterated portion extending into the cord.

Not infrequently there is an associated weakness of the structures of the abdominal wall medial to the internal ring and when associated with a patent peritoneal process and increased abdominal pressure a hernia early in life usually results. Occasionally muscle weakness alone may predispose to a hernia at the internal ring.

There are several factors which tend to delay the development of an indirect hernia in the presence of some inherited or acquired weakness: (1) when the neck of the sac at the internal ring is unusually small; (2) when the abdominal muscles are well developed by inheritance or through progressive physical activity, so that the internal ring is well protected at all times; (3) the absence of extreme or prolonged intra-abdominal pressure or debilitating illness or a combination of these factors, with good muscle defense.

There are other factors which tend to predispose to the late development of an indirect hernia: 1. Usually and normally there is a decrease in physical activity and muscle strength. This may start before the age of 30 as the result of a sedentary

occupation but usually takes place to some extent by 40, and almost invariably at 50. 2. The frequent increase in weight in men after 25 or 30 and especially after 50 increases the intra-abdominal tension but also is almost constantly associated with some decrease in muscle strength and tone at the internal ring. 3. Following a decrease in muscle strength and tone, any unusual increase of abdominal pressure such as lifting a heavy object, a sudden strain or effort, a chronic cough and other factors may overcome the protective muscle defense at the internal ring and initiate a hernia.

In the instance in question there may have been a slight or even a considerable patency of the peritoneal process which was attached to its obliterated portion in the cord at the internal ring. Good muscle development and tone protected the internal ring during the years of strenuous activity. Several years after giving up these activities and following a severe effort or strain, this patient had a hernia. Lack of muscle defense at the vulnerable internal ring probably resulted from lessened activity and from increased age.

In the absence of contraindications, the hernia should be operated on without unnecessary delay. Otherwise a properly fitting truss should be worn.

#### POSSIBLE MILIUM CONGENITALE IN INFANT

*To the Editor:*—A baby, aged 10 weeks, for two weeks has had minute nonitching vesicles over the face, scalp, anterior part of the neck and upper anterior part of the chest. They appear to be in the skin but do not break. Those on the chest are surrounded by a small areola of red but elsewhere do not appear to be associated with much inflammatory reaction. The baby is on a formula of Karo, partly skimmed milk and water, with orange juice and cod liver oil in the usual quantities, and is doing well from a nutritive standpoint. He is bathed with Ivory or castile soap and the creases are oiled with Mennen's Baby Oil. I know of no material that comes in contact only with the skin area mentioned. Cod liver oil is now being omitted from the diet. Orange juice was omitted for one week without results. The baby is on small doses of ultraviolet rays for want of something better to do. I dislike changing the entire formula unless necessary, as in the first few days of the baby's life I had a hard time getting the digestive system oriented when the mother's milk failed. M.D., New York.

**ANSWER.**—The lesions on this newborn infant's skin, from the description, might well be milium congenitale. Milia are small whitish nodules in the skin, especially of the face. They are usually retention cysts of the sebaceous glands or hair follicles. The lesions may be present at birth and occur on the scalp and face. They are reddish, pale red-yellow or yellow lesions and vary from pinpoint sized papules to well defined patches. Crocker, who described this condition, believed that the lesions were the result either of miscarried embryonic epithelium or of the adherence of the amnion at an early stage of fetal life. An excellent illustration of milium congenitale in a newborn infant, taken from the collection of C. Leiner, may be found in Pfaunder and Schlossmann's Handbuch des Kinderheilkunde, fourth edition, volume 10, "Die Hautkrankheiten des Kindesalters" (Berlin, F. C. W. Vogel, 1935, p. 267). The infant's diet need not be altered, as the lesions would not be affected by changes in food.

#### ELECTRIC MASKS FOR HAY FEVER

*To the Editor:*—I have noticed numerous advertisements of various masks with electric batteries, also numerous other gadgets to insert into the nostrils for the control of hay fever. Will you kindly discuss the relative merits, if any, of these contraptions?

W. E. DELICATE, M.D., Edwardsville, Ill.

**ANSWER.**—A device of the aforementioned description, called the Allergy Electric Mask, has been placed on the market by the Allergy Research Institute of Cincinnati. This device consists of a double wall metal cup, perforated to permit passage of air and by means of a soft rubber face piece fitting tightly over the mouth and nostrils. It is held there by ribbons which tie around the head. Between the two walls is placed a filtering paper. The positive pole is connected to one metal cup and the negative to the other cup. Claims are made that the pollen particles are precipitated by the potential on the charged plates. Those particles that are not caught by means of the electrostatic precipitating process are trapped by means of the paper filters.

Insufficient critical evidence has been made available to substantiate the claim that a potential of 1½ volts produces a force of sufficient strength to attract particles and hold them, to be of any great value in the removing of pollen for hay fever relief. To filter efficiently by the Cottrell process of electrostatic precipitation, potential of several thousand volts is required to attract the pollen particles and hold them to

the plates. It is possible that what filtering efficiency this mask may have is due largely to the filter paper between the two charged plates. It is probable that, if the patient is willing to wear the mask, a considerable portion of the pollen will not reach the mouth or nostrils. There is, however, another port of entry for pollen, namely the eyes; hence the wearing of this mask is no assurance that the patient will obtain relief from hay fever symptoms. Furthermore, unless the patient is careful, leaks occur between the skin and the rubber, thereby reducing the efficiency of the mask.

#### PROBABLE NEUROSYPHILIS: TREATMENT

*To the Editor:*—A white man aged 50, a cook, married but without children, contracted syphilis in 1918 while in the navy. He received three intravenous injections and several in the hip. For about two years he took some form of mercury pills. The patient felt perfectly well until about two years ago, when he began to complain of impairment of memory, irritability and a peculiar sense of pressure along the upper part of the spine. I first saw him in March 1938. He was well developed, was 66½ inches (168 cm.) tall and weighed 164 pounds (74 Kg.). There was no apparent heart lesion, the blood pressure was 144 systolic and 88 diastolic, the Kahn reaction was 4 plus, and urine and Romberg tests were negative. The tendon reflexes were hyperactive. The pupils were markedly miotic. The ophthalmologist found visual acuity normal and the visual field restricted in the temporal palpebral quadrants. The optic nerve was slightly affected, and blood vessels showed moderate arteriosclerosis. There were some areas of chorioretinitis in all stages from old to new. The patient has been treated with bismarsen intramuscularly weekly for five weeks, the first injection being 0.1 Gm. and the following four injections 0.2 Gm. He then received 0.2 Gm. every fourth day and has had a total of ten injections to date. He also had 10 minims (0.6 cc.) of potassium iodide three times a day for two weeks, rest for one week, and then a repetition of the treatment. His Kahn reaction is still 4 plus. His urine has been normal. Subjectively he has improved in that his memory is better, he is not irritable, he says he has more "pep," and the sense of pressure in the spine has left him. Contraceptives have been used and the wife has never been pregnant. Will you kindly outline a course of treatment? Probably you will suggest a spinal fluid examination. If positive, how would this affect the treatment?

M.D., Maine.

*ANSWER:*—From the data furnished it would seem that the patient has neurosyphilis, and in view of this it would be advisable to examine his spinal fluid immediately. This would be done not only to confirm the impression that the infection has invaded the nervous system but also to determine the character of the spinal fluid involvement. The loss of memory and irritability suggest, of course, that the patient may be in an early phase of dementia paralytica. The eye condition might well represent a complication of the syphilis, and it would seem advisable to continue with arsphenamine, bismuth and potassium iodide before changing the program of treatment. Neoarsphenamine or arsphenamine should be given for a series of approximately ten injections in conjunction with at least twenty injections of a bismuth compound and potassium iodide by mouth. At the end of this treatment the spinal fluid should be reexamined and, if there is not any material change in it, it would seem that the patient would be a candidate for fever therapy, particularly if he manifests the parietic type of spinal fluid. The treatment outlined would tend to prevent complications in the visual tract from fever therapy. The treatment subsequent to the malarial course must be guided by the response the patient makes to fever therapy, but in all probability further treatment with arsphenamine and a bismuth compound will be necessary approximately three months after the fever course. In view of the condition of the eye it would be inadvisable to give trypanamide.

#### WOOL FAT AND LIQUID PETROLATUM FACE CREAMS

*To the Editor:*—Please discuss wool fat and liquid petrolatum creams as to efficiency and danger for growing hair. How do your regard almond, olive and mineral oils for use in face creams? M.D., Maryland.

*ANSWER:*—Hydrous wool fat (adepts lanae hydrosus, lanolin) is obtained from the fat of sheep's wool. It resembles wax, consisting of cholesterol and isocholesterol either in free state or combined as esters of fatty acids; in this respect it differs from usual animal and vegetable fat in that it does not contain the glycerin esters of fatty acids. It has long maintained its popularity as an ingredient of pharmaceutical ointments and cosmetic creams. In cosmetic form it is highly commended as an excellent emollient. When purified it is practically inodorous, blends well with many drugs and cosmetic ingredients, and does not readily become rancid. Because of its sticky tendency, no more than from 3 to 5 per cent is used in creams, to which mineral oils are usually added for their lubricating quality. Wool fat is

used in conjunction with water soluble materials and employed for pharmaceutical purposes, whereas anhydrous wool fat is used cosmetically. There is no proved tendency in wool fat toward the promotion of hair growth. It has only rarely caused allergic symptoms (Ramirez, M. A., and Eller, J. J.: The "Patch" Test in "Contact Dermatitis," *J. Allergy* 1:489 [Sept.] 1930).

Liquid petrolatum, a synonym for which is mineral oil, is derived from various forms of petroleum. It is valued for its detergent and lubricating power, which makes the oil an important ingredient of cleansing creams. Liquid petrolatum has no power of skin penetration. It will not stimulate hair growth. Its great advantage is the lack of tendency toward rancidity, because it is not a fat. Almond and olive oils, which are vegetable fats and are more emollient in action, easily become rancid and lack the detergent qualities of the mineral oils. Impurities in any of these products may cause them to be irritating. There are also rare cases of allergy. For examples see: Coca, Walzer and Thommer, "Asthma and Hay Fever in Theory and Practice," and R. P. White, "Dermatoses or Occupational Affections of the Skin," page 274.

#### ARSENIC AND ACUTE STUPOR

*To the Editor:*—A Polish laborer aged 53 was run over by an automobile while lying in the street. His past history was essentially negative except for two attacks of "grip" fifteen and eight years ago. He was seen at 6 p. m. and stated that he was in excellent health. Between that time and his death he had two beers and one shot of whisky. At about 7:15 he was said to have been staggering. At 7:45 he was run over by the automobile and witnesses claim that he was lying in the road in a stupor. Autopsy and chemical examination of the stomach revealed 23½ grains (0.15 Gm.) of arsenic in the stomach, spleen and kidney. How much arsenic is necessary to produce such an acute stupor? Please refer me to the latest literature on arsenic poisoning.

M.D., Massachusetts.

*ANSWER:*—The amount of arsenic necessary to produce an acute stupor varies with individuals and cannot be fixed but is usually large. The amount absorbed is the important factor. Arsenic in the stomach contents is not important from this standpoint. In the case cited no distinction is made between arsenic in the stomach (contents?) and that in the spleen and kidney. The liver, brain and kidney are the organs to examine in acute cases. The minimal fatal dose is 3 grains (0.2 Gm.) absorbed, but that amount is not adequate to produce acute stupor, which is rare under any conditions. Experimental evidence indicates that alcohol favors either the absorption or the retention of arsenic in the organs.

#### References:

- Webster, R. W.: *Legal Medicine and Toxicology*, Philadelphia, W. B. Saunders Company, 1930.  
Gonzales, T. A.; Vance, Morgan, and Helsen, Milton: *Legal Medicine and Toxicology*, New York, D. Appleton-Century Company, 1937.  
Witthaus, R. A.: *Medical Jurisprudence, Forensic Medicine and Toxicology*, New York, William Wood & Co., 1911. Still consulted because of its exhaustive study of a large series of cases.  
Zimmermann, E., and Remy, E.: *Arch. f. Gewerbepath. u. Gewerbehyg.* 7: 486 (Dec.) 1936.

#### DANGERS OF PESSARY FOR CONTRACEPTION

*To the Editor:*—Is the flexible cone pessary an acceptable product and without danger to the cervix uteri as far as hemorrhage, cancer and erosion of the cervix are concerned? I have received literature on this contraceptive device. It is a pliable rustless chromium wire covered to a thickness of one thirty-second inch with soft pure rubber. I have been told that short wave diathermy treatments cannot be given to the pelvis when the Gomco contraceptive metallic chain is in the uterus. Its temperature is supposed to be raised to such an extent that it produces a burn during a short wave diathermy treatment. Would it be all right to give long wave diathermy treatments to the pelvis to a patient with the rubber coated flexible cone pessary in the cervix? M.D., Minnesota.

*ANSWER:*—Occasionally in selected cases of dysmenorrhea and amputation of the cervix, with obstruction of the outlet of the uterus, a cervical pessary is of distinct value. In these cases the pessary should be removed after two or three months and it may not have to be replaced. Intracervical pessaries which are used for contraceptive purposes are nearly always a menace to life and health and therefore should never be used. Many complications have arisen following their insertion, including cervical "erosions" and bleeding. It has not been proved that cancer has arisen following the use of these devices. In some cases death due to infection has resulted directly from their use. Whereas intra-uterine foreign bodies for the purpose of preventing conception are not as dangerous as intracervical appliances, they also should not be used. If these suggestions are followed there need be no fear concerning the use of short or long wave diathermy in the presence of metallic foreign bodies in the uterine or cervical canal.

# RECUMBENT HYPOTENSION AND POSSIBLE DIAPHRAGMATIC HERNIA

*To the Editor:*—A woman aged 49, with some of the nervous manifestations of the menopause, has a blood pressure of 180/140 in the sitting position and only 95/60 while recumbent. In spite of bromides and various sedatives, she persistently complains of insomnia because of feelings of pain around her heart, sensations of pressure in the upper part of the abdomen and gurgling of gas interpreted as borborygmi. She had a cholecystectomy two years ago, which failed to relieve the pains and discomfort in the upper part of the abdomen. She had had symptoms of spastic colitis and has been treated for this without much relief. Physical examination reveals no manifestations except visceroptosis, verified at the laparotomy two years ago, moderate obesity and tenderness all through the upper part of the abdomen and down into the left side. Laboratory tests reveal a red blood count of 2,850,000, hemoglobin 65 per cent, alcohol histamine meal showing no free acid and only 3 points of total acid, no occult blood, and several gram-negative large rod-shaped bacilli. Blood smear shows 57 per cent polymorphonuclears, 31 per cent lymphocytes and no abnormal red cells or nucleated reds. Could the pain and discomfort in the upper part of the abdomen and heart region be in any way associated with the recumbent hypotension?

W. L. SHARP, M.D., Anderson, Ind.

**ANSWER.**—Such variations of the arterial tension as recorded are extremely unusual. It would be interesting to know whether these violent fluctuations have been observed repeatedly and consistently or only on one occasion. The pressure of 180/140 is in itself rather unusual; a pulse pressure of but 40 mm. is small and suggests myocardial inadequacy. It is unfortunate that no mention is made of the pulse rate in the two positions or whether there is any asymmetry of the tension in the two arms.

The other clinical observations are highly suggestive of diaphragmatic herniation with intrathoracic ventration of abdominal viscera. The visceroptosis is suggestive of poor musculature; the symptoms of diaphragmatic hernia are almost invariably greatly exaggerated in the recumbent position. Approximately 95 per cent of diaphragmatic hernias occur on the left side. The contents of these hernias vary greatly; there may be herniation of a single organ or almost all the abdominal viscera.

The symptoms of diaphragmatic hernia are extremely variable. Often the first clear clinical picture is a simulation of acute obstruction of the bowel. The diagnosis is more frequently in error than correct in these patients. They are often treated (both surgically and medically) for heart disease, peptic ulcer, cholecystitis, irritable colon, colitis or carcinoma of the esophagus for years before the true nature of the disease is determined. The proof of diaphragmatic hernia depends on x-ray visualization of abdominal viscera within the thoracic cavity.

In the present instance, correction of the severe anemia should be done prior to any attempt at surgical procedure.

# DIATHERMY AND HYPERTENSIVE RETINITIS

*To the Editor:*—A man aged 65 became almost completely blind in early manhood when a ball struck him in the right eye. At present vision is 10/200 with an extensive central area of chorioretinitic degeneration. In November 1937 the vision of the left eye was corrected to 20/20 and no retinal abnormality was noted. Three weeks later serious loss of vision occurred. Reexamination of the left eye showed retinal hemorrhages and exudates in the macular area; vision was 20/100. Subsequent hospital examination indicated hypertensive retinitis and suggested that the macular lesions were of vascular origin associated with general arteriosclerosis. Blood pressure was 158 systolic, 80 diastolic. My own examination of palpebral peripheral vessels shows no thickening or hardness of the vessel walls. There is von Recklinghausen's disease of the skin of moderate severity. All laboratory tests and physical examination are essentially negative. He has received potassium iodide for one and one-half months with no resorption or visual improvement. Smoking and drinking have been discontinued. Is there any danger in trying physical therapy, such as short wave, on the left eye? What routine should be used in applying it? What is the prognosis for visual improvement? Have you any suggestion as to medication?

M.D., New York.

**ANSWER.**—Short wave diathermy has been recommended by Gutsch for the conditions described (*Transactions of the German Ophthalmologic Congress* 51:221, 1936). He used the Siemens ultratherm with glass shell electrodes placed from 1 to 3 cm. from the globe, and the current advised by the manufacturers for therapy; time from five to fifteen minutes, treatments from two to three times a week. He observed no harmful effects, but a few reports of retinal hemorrhage following such treatment are on record. It is certainly doubtful whether results could be expected by this method which would not be obtained by spontaneous absorption of hemorrhages. The use of large amounts of vitamin B as advised by Carroll in toxic amblyopia (*Arch. Ophthalm.* 18:948 [Dec.] 1937) would have no particular application in this case. It might be tried as part of the general treatment in case damage to the nerve by nutritional deficiency

might be an additional factor but without expecting too much from the method. General hygienic measures, especially rest and any other measure to control blood pressure, would offer the best chance of preventing further damage. A slight improvement of vision is sometimes observed in cases which are brought under such control. Control of the blood phosphorus content, elimination of sodium chloride from the diet and administration of ammonium chloride 1 Gm. four times a day, may be of value in controlling edema.

# CORONARY THROMBOSIS IN WAR VETERAN

*To the Editor:*—An ex-service man aged 42 was suddenly seized with an acute coronary thrombosis. The diagnosis was verified by electrocardiography. His past history was entirely irrelevant and his family history was good. His habits were conservative. At no time since his discharge from the army has the patient been under any mental or physical strain, nor has he ever been subjected to any financial or domestic responsibilities. His occupation, barber, is anything but exacting. Since the etiologic factors ordinarily found in coronary disease seem to be absent in this individual, and in view of the rather early occurrence, is it too far fetched to assume that the ten months he spent in the front line trenches, with all the suffering and physical and nervous insults incident to modern warfare, may have been a contributing factor to the early development of this disorder? Have any studies been made or are any statistics available to show the incidence of coronary disease in war veterans? Is it possible that the present day increase in coronary artery disease may be the price that our heroes of 1918 may be paying in 1938?

M.D., New York.

**ANSWER.**—The question is whether a ten months period of military service in the front line trenches twenty years prior to the attack of coronary thrombosis might have been a contributing factor.

The data in the Veterans' Administration indicate a steady increase in the number of cases of coronary thrombosis for hospital treatment. In addition an increased incidence of coronary thrombosis has been found at necropsy. It must be concluded, therefore, that the increased incidence of coronary thrombosis in the ex-service population at this time is due to the aging of the veterans.

Considering all the information available with regard to the circumstances surrounding the case in question, it would be difficult to establish a causal relationship between military service twenty years ago and an acute attack of coronary thrombosis at this late date.

# SUBCUTANEOUS ATROPHY FROM INSULIN

*To the Editor:*—A girl aged 6 years is now on her fourth year of insulin. The insulin has been given in doses varying from 3 units twice daily to 10 units three times daily, all possible regions of the body being used, and no one region used for more than a few doses in succession. Yet there have developed on the arms and legs five or six "atrophic areas," or areas of shrinking or indentation of soft tissues. The new protein zinc insulin has not been used. These areas began appearing six months ago and are increasing in size and number. Should this condition cause undue concern? Any suggestions would be appreciated.

ROBERT J. RALSTON, M.D., Holyoke, Colo.

**ANSWER.**—Almost invariably, areas of atrophy of subcutaneous fat due to insulin will disappear in time if injections are discontinued in the part of the body affected. Such areas are distinctly less common with protamine zinc insulin, but they may occur. This lower incidence is related probably to the fewer injections required and possibly to the neutral reaction of the material. To prevent the occurrence of new lesions, U-80 insulin, regular or protamine, is indicated, as is also care as to distribution of doses. By constant shifting of the site of injection, it should be arranged so that no one area receives insulin oftener than once in four weeks. One should remember that, in addition to the upper arms and thighs, the abdominal wall and flanks provide excellent sites for injections.

# URETHROGRAPHY WITH BARIUM SULFATE, SODIUM IODIDE

*To the Editor:*—Is there any danger in the injection of barium sulfate into the urethra for x-ray purposes, if the solution goes into the bladder? If so, what solution may be used for this purpose?

M.D., Nebraska.

**ANSWER.**—There is no important danger from absorption when barium sulfate is injected into the urethra for x-ray visualization. Under certain circumstances of obstruction of the bladder neck, if this substance should be forced back into the bladder it might possibly be the basis for the formation of bladder stone and for this reason, if for no other, its use would be contraindicated.

There is no indication for using such a substance when there are many others specially devised for this purpose. A simple

and yet useful and practical medium for urethrography is ordinary 12.5 per cent aqueous solution of sodium iodide.

Dr. Flocks of the University of Iowa has suggested the use of 10 per cent sodium iodide in jelly as an ideal medium for urethrograms and has demonstrated its efficacy on many occasions. It is now generally considered the ideal medium for this purpose.

#### SALT WATER THERAPY

To the Editor:—I would greatly appreciate any information relative to the use of salt water therapy in different chronic conditions.

STERLING W. OBENOUR, M.D., Zanesville, Ohio.

ANSWER.—Much has been said and written on the value of salt water baths in health and in certain diseases, both acute and chronic. There is little objective evidence, however, to the scientific critic to indicate that the presence of salt adds much to the therapeutic effectiveness of baths. It is more probable that the temperature is the effective element rather than the presence of the salt.

More optimistic reports of the value of salt water baths and sea bathing have appeared in the literature principally from the continental and English spas. If a more favorable view is desired, the following references may be consulted:

- Lendel, E.: Zur Einwirkung von Salzbadern auf den Kreislauf, *München. med. Wchschr.* 81: 1272 (Aug. 17) 1934.  
Krauel, G.: Ueber Hauttemperaturen nach einem Solbade, *Deutsche med. Wchschr.* 57: 805 (May 8) 1931.  
Harpuder, K.: Ueber Diffusionsvorgänge an der menschlichen Haut, *Ztschr. f. d. ges. exper. Med.* 76: 724, 1931.  
Messerle, N.: Das Verhalten des Blutzuckers nach Sol- und Süßwasserbädern, *Ztschr. f. d. ges. phys. Therap.* 35: 57 (May 31) 1928.  
Ley, R.: Der Einfluss von Solbädern auf den Wasserhaushalt, *Ztschr. f. d. ges. phys. Therap.* 35: 47 (May 31) 1928.  
McClellan, W. S.: Balneotherapy at Saratoga Springs, *Tr. American Clin. & Climatol. A.*, 1934.

#### DURATION OF RETENTION OF RUBBER TUBE IN BILE DUCT

To the Editor:—How long has a rubber tube been known to remain in the bile duct? I am not referring to a T tube or drain but to a rubber tube used for the purpose of reconstructing or inside tracking operations of the biliary duct channel, such as that used in the Mayo operation in choledochoduodenostomy to maintain patency. There are several references in the literature stating that these tubes have been kept in place for as long as four years.

P. A. CONSALES, M.D., Boston.

ANSWER.—The longest period so far as known that a tube has remained in the bile duct following a reconstructive operation for stricture was twelve years. This occurred in the case of a foreign surgeon. The interior of the tube became encrusted with bile pigment debris, which obstructed it. It was removed at the time several visiting surgeons from the United States were in attendance.

#### CONTRACTED PUPILS

To the Editor:—A single woman aged 42 noticed a few months ago that the sight of her left eye was affected. She is a school teacher. January 15 her vision for the left eye was fingers at 6 feet. The vision of the right eye was 20/10, no error. The pupils of each eye are small, almost pinpoint. There was a slight reaction when exposed to light, noticeable only at the pupillary margin. The puzzling feature of this case is that the pupil of each eye will not dilate under a strong solution of atropine applied every few hours for two days. A view of the fundus is impossible. The eye with poor vision is not inflamed. Tension is normal. No watering or secretion occurs. The vision has remained the same since January 15. Complete laboratory tests, including the Wassermann test and x-ray examination of the sinuses and lungs, have been made and found to be comparatively negative. Some scars in the lungs indicate an early tuberculous involvement, which has healed. A slight cloudiness of the left antrum, possibly imaginary, prompted an opening through the nasal passage, but the antrum was found to be free from infection. One or two teeth showed some infection and have been extracted. Have you any record of any eye with normal vision and free from inflammation the iris of which does not respond to atropine?

W. R. THOMPSON, M.D., Fort Worth, Texas.

ANSWER.—The description of the eye gives no information as to what might be ascertained by a slit lamp examination. If, with the slit lamp microscope, one sees old keratic precipitates or pigment on the lens capsule, it would indicate that the pupils are small because of an old healed iridocyclitis with posterior synechiae. A thickened iris or one with sclerotic blood vessels might have a miotic pupil which does not dilate well with mydriatics even as strong as atropine. Following slit lamp examination an attempt to dilate the pupil with a subconjunctival injection of a mixture of cocaine 1 per cent, atropine 1 per cent and 1:1,000 solution of epinephrine should be made. One may use 1 per cent suprenin bitartrate jelly twice daily. Either or both of these will sometimes dilate an iris bound down by posterior synechiae.

#### GASTRO-ENTERITIS AND WATER SUPPLY

To the Editor:—A city water supply was augmented by the water from a well which had been unused for several weeks. From six to eight hours after this, a large percentage of the users of the combined water were taken suddenly ill with vomiting and diarrhea. There was no fever. These symptoms lasted from a few hours to about a day. Biologic analysis a few days later showed the water from the well which had been idle to be contaminated with *Bacillus coli* and *B. aerogenes*. There was reason to think that the water might have contained extraneous inorganic material. Is it probable that the introduction of contaminated water into the supply would cause such prompt afebrile symptoms either from the organisms themselves or from possible derivative products? Is it the rule or even the rare exception that water thus contaminated would have such results? Would it not be more likely, if any symptoms were occasioned, that they would be accompanied by fever and would have a delayed onset? Your opinion together with references on this matter would be appreciated.

T. L. CHADBOURNE, M.D., Vinton, Iowa.

ANSWER.—The sudden introduction of sewage-polluted water into a pure water supply has on occasion resulted in gastro-enteritis with an incubation period of from eight to twelve hours. A number of days later typhoid or other enteric diseases of bacterial origin may appear (Jordan, E. O., and Irons, E. E.: *J. Infect. Dis.* 11:21, 1912). The etiology of the initial gastro-enteritis is obscure. Although the presence of *Bacillus coli* is suggestive of fecal contamination of the well water, it is not possible to assay the potability of a water on this basis alone. Unless the water was so heavily contaminated as to approach sewage, it is unlikely that its introduction into the city supply would result in gastro-enteritis of such a short incubation period. Contamination with heavy metals is a possibility also. Certain natural waters of the acid peaty type, for example, that have been in contact with copper pipes may give rise to gastrointestinal symptoms. In the absence of sufficient information, it is impossible to say whether or not the introduction of the well water in question bore a relation to the outbreak of gastro-enteritis.

#### SAFETY OF DENTAL X-RAY EXPOSURES

To the Editor:—I am using the regular type of dental x-ray machine with 10 milliamperes. What would be the maximum amount of exposure that I can give a patient at the same area with safety?

PHILIP GREENBERG, M.D., Bronx, N. Y.

ANSWER.—A dental x-ray equipment giving 10 milliamperes was tested for output in roentgens. There was a filter of the bakelite case of the box enclosing the tube as well as the layer of oil surrounding it. The measured dose was 2 roentgens per second when the focal spot of the tube was about 7 inches from the skin of the face. The average exposure for a molar is ten seconds, so the dosage would be about 20 milliampere-seconds for a molar. About half that would suffice for an incisor. The maximum safe exposure over any given skin area with the dental equipment described under the conditions named would be 200 milliampere-seconds.

#### STERILIZATION OF BONE PLATES

To the Editor:—What is the proper method of sterilizing beef-bone plates and screws?

J. W. McROBERTS, M.D., Sheboygan, Wis.

ANSWER.—There are only two methods: thermal and chemical. One group does not use plates but boils the pegs twenty minutes. Others put them in the autoclave for ten minutes. In the old days before chrome plated instruments were in general use there was danger of using chemicals because of corrosion; but that does not occur at present.

#### DIAGNOSIS OF PENILE ULCER—DUCREY VACCINE

To the Editor:—In the discussion of "Diagnosis of Penile Ulcer" (THE JOURNAL, July 16) reference was made to "dmelcos" and the difficulty in obtaining this European vaccine. The Ducrey vaccine for the diagnosis of chancre is available in this country and is listed by the Lederle Laboratories, Inc., among their products. For the last two years the University of Georgia School of Medicine has distributed this "vaccine" to scores of medical institutions and physicians who have manifested an interest in its diagnostic value. Chancroidal bubo pus has been shown to be inferior to the vaccine in diagnosis (Greenblatt, R. B., and Sanderson, E. S.: Diagnostic Value of the Intradermal Chancroidal Test, *Arch. Dermat. & Syph.* 26: 486 [Sept.] 1937; *Am. J. Clin. Path.* 7: 193 [March] 1937). The vaccine may be made with moderate ease in any competent laboratory by employing the technic used at the University of Georgia School of Medicine (Sanderson, E. S., and Greenblatt, R. B.: *South. M. J.* 30: 147 [Feb.] 1937). Ducrey vaccine made from strains of Ducrey bacillus of American origin has been shown to be the equal of European "dmelcos" as a diagnostic procedure (Greenblatt, R. B., and Sanderson, E. S.: *J. M. A. Georgia* 27: 218 [June] 1938).

G. LONBARD KELLY, M.D., Augusta, Ga.



## Medical Examinations and Licensure

### COMING EXAMINATIONS

#### STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in THE JOURNAL, September 3, page 963.

#### NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* Examinations will be held in all centers where there is a Class A medical school and five or more candidates who wish to write the examination, Sept. 12-14. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

#### SPECIAL BOARDS

AMERICAN BOARD OF ANESTHESIOLOGY: An affiliate of the American Board of Surgery. New York, Oct. 21-22. Sec., Dr. Paul M. Wood, 745 Fifth Avenue, New York.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written.* Various large cities in the country about Oct. 1. *Oral.* St. Louis, Nov. 11-12. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written* examinations will be held in various parts of the United States, Oct. 17 and Feb. 20. Application for the October examination must be received before Sept. 15 and for the February examination on or before Jan. 1. Sec., Dr. William S. Middleton, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written* examination and review of case histories of Group B applicants will be held in various cities of the United States and Canada, Nov. 5. General examination for all candidates (Groups A and B) will be given in St. Louis, June. Applications must be filed not later than sixty days prior to date of examination. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: New York, Oct. 7, and Washington, D. C., Oct. 8. Sec., Dr. John Green, 3720 Washington Blvd., St. Louis, Mo.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Memphis, Tenn., January. Applications for this examination must be filed with the Secretary on or before Oct. 15. Sec., Dr. Fremont A. Chandler, 6 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Washington, D. C., Oct. 7-8. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PEDIATRICS: Detroit, October 26; Rochester, N. Y., November 13; and Oklahoma City, November 15. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York, Dec. 28-30. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: Atlantic City, N. J., Sept. 15-18. Sec., Dr. Byrl R. Kirklm, 102-110 Second Ave. S.W., Rochester, Minn.

AMERICAN BOARD OF UROLOGY: New York, Jan. 13-15. Applications must be submitted not later than Oct. 1. Sec., Dr. Gilbert J. Thomas, 1009 Nicollet Ave., Minneapolis.

### District of Columbia July Report

Dr. George C. Ruhland, secretary, Commission on Licensure, reports the written examination held in Washington, July 11-12, 1938. The examination covered nine subjects and included sixty questions. An average of 75 per cent was required to pass. Twenty-four candidates were examined, all of whom passed. Eight physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
George Washington University School of Medicine.....	(1935) 77.7, 84.2, (1937) 83.5, 85.2, 85.7, 86.2, 86.5, 88.2	(1935)	84.9,
Georgetown University School of Medicine.....	(1936) 80, (1937) 84, 85.3, 85.3, 86	(1936)	79,
Howard University College of Medicine.....	(1937)	(1937)	84
University of Illinois College of Medicine.....	(1935)	(1935)	76.7
University of Minnesota Medical School.....	(1938)	(1938)	81.5
Washington University School of ..	(1938)	(1938)	77.7
University of Rochester School of ..	(1938)	(1938)	81.8
University of Pennsylvania School ..	(1930)	(1930)	89.3
Medical College of Virginia.....	(1930) 83, (1937)	(1937)	86.7

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad.	of
College of Medical Evangelists.....	(1932) N. B. M. Ex.	(1932)	N. B. M. Ex.
Georgetown University School of Medicine.....	(1935), (1936, 2) N. B. M. Ex.	(1935), (1936, 2)	N. B. M. Ex.
School of Medicine of the Division of Biological Sciences ..	(1932), (1934) N. B. M. Ex.	(1932), (1934)	N. B. M. Ex.
Harvard University Medical School.....	(1927) N. B. M. Ex.	(1927)	N. B. M. Ex.
Tufts College Medical School.....	(1933) N. B. M. Ex.	(1933)	N. B. M. Ex.

Twenty-four physicians were licensed by reciprocity from January 24 through July 13. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Colorado School of Medicine.....	(1915)	(1915)	Colorado
George Washington University School of Medicine.....	(1930), (1933), (1934) Maryland	(1930), (1933), (1934)	Minnesota
Georgetown Univ. School of Medicine.....	(1931) Penna. (1932)	(1931), (1932)	Virginia
Howard University College of Medicine.....	(1932)	(1932)	Indiana
Indiana University School of Medicine.....	(1920)	(1920)	

Johns Hopkins University School of Medicine.....	(1913)	New York,
(1928) Maryland		
University of Maryland School of Medicine and College of Physicians and Surgeons.....	(1930) Maryland, (1938)	Texas
Boston University School of Medicine.....	(1916)	Mass.
Harvard University Medical School.....	(1929)	Maine
University of Michigan Medical School.....	(1934)	Michigan
Long Island College of Medicine.....	(1934)	Maryland
University and Bellevue Hospital Medical College.....	(1922)	New York
Temple University School of Medicine.....	(1917)	Penna.
University of Pennsylvania School of Medicine.....	(1928)	Louisiana
University of Wisconsin Medical School.....	(1934)	Wisconsin

The following physician was licensed by endorsement on July 13 by special act of Congress:

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad.	of
Universität Heidelberg Medizinische Fakultät.....	(1910)	(1910)	Germany

### Florida June Examination

Dr. William M. Rowlett, secretary, State Board of Medical Examiners, reports the examination held at Jacksonville, June 13-14, 1938. One hundred and twenty-three candidates were examined, ninety-seven of whom passed and twenty-six failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
College of Medi " " " "	" " " "	" " " "	78.9
Yale University	" " " "	" " " "	75
George Washington	" " " "	" " " "	80.4,
(1938) 82.1			
Georgetown University School of Medicine.....	(1936)	(1936)	82.2
Howard University College of Medicine.....	(1935)	(1935)	81.7
Atlanta College of Physicians and Surgeons, Georgia.....	(1908)	(1908)	82.5,
(1913) 75.9			
Emory University School of Medicine.....	(1923)	(1923)	75,
(1934) 80.7, (1935) 81.1, (1938) 75.2, 77, 77.4, 77.8,			
82.3, 82.7			
University of Georgia Medical Department.....	(1932)	(1932)	82.8
University of Georgia School of Medicine.....	(1935)	(1935)	82.4,
(1936) 77.6, (1937) 81.3			
College of Physicians and Surgeons of Chicago.....	(1908)	(1908)	76.9
Northwestern University Medical School.....	(1918)	(1918)	80.6,
(1936) 81.7, (1937) 84.5			
Rush Medical College.....	(1934) 82.8, (1937)	(1934), (1937)	81
School of Medicine of the Division of Biological Sciences ..	(1931)	(1931)	77.2
University of Illinois College of Medicine.....	(1915)	(1915)	79.2,
(1927) 80.7, (1933) 80.3, (1937) 84.3			
State University of Iowa College of Medicine.....	(1937)	(1937)	79.9,
(1938) 82.9			
University of Louisville School of Medicine.....	(1932)	(1932)	75.5,
(1933) 79.4, (1936) 77.6			
Louisiana State University Medical Center.....	(1938)	(1938)	83*
Tulane University of Louisiana School of Medicine.....	(1919)	(1919)	82,
(1931) 77.7, (1934) 80.2, (1938) 79.3, 81.2, 82.1, 82.3,			
89.7			
Johns Hopkins University School of Medicine.....	(1930)	(1930)	80.7
Harvard University Medical School.....	(1935)	(1935)	77.6,
Tufts College Medical School.....	(1930) 80.6, (1935)	(1930), (1935)	87.3
University of Michigan Medical School.....	(1936)	(1936)	84.9
St. Louis University School of Medicine.....	(1933) 78.6, (1936)	(1933), (1936)	80.5
Creighton University School of Medicine.....	(1935)	(1935)	76.9
Columbia University College of Physicians and Surgeons ..	(1925)	(1925)	77.5
New York Homeopathic Medical College and Flower Hospital	(1914)	(1914)	80.9
New York University	(1936)	(1936)	78.5
University	(1924)	(1924)	84.5
University	(1935)	(1935)	75.9
Duke University School of Medicine.....	(1935) 80.8, (1937)	(1935), (1937)	81.3
Eclectic Medical College, Cincinnati.....	(1937)	(1937)	79.3
Ohio State University College of Medicine.....	(1934)	(1934)	75.9
University of Cincinnati College of Medicine.....	(1931)	(1931)	79
(1937) 78.2, 82, (1938) 82.1			
Western Reserve University School of Medicine.....	(1921)	(1921)	79.6,
Jefferson Medical College of Philadelphia.....	(1931) 78.8, (1937)	(1931), (1937)	77.3
Temple University School of Medicine.....	(1933)	(1933)	75.3
(1938) 83.8, 84.5			
University of Pennsylvania School of Medicine.....	(1917)	(1917)	82.7,
University of Pittsburgh School of Medicine.....	(1933)	(1933)	83.8,
(1934) 79.7, (1937) 84.7			
Medical College of the State of South Carolina.....	(1930)	(1930)	77.3
Meharry Medical College.....	(1936)	(1936)	75.3
University of Tennessee College of Medicine.....	(1927)	(1927)	82.7,
(1937) 77.2, (1938) 76.2			
Vanderbilt University School of Medicine.....	(1937)	(1937)	82,
78.9, (1938) 82.6, 84.6			
University of Texas School of Medicine.....	(1927)	(1927)	75.6,
Medical College of Virginia.....	(1938)	(1938)	78.6
University of Virginia Department of Medicine.....	(1936)	(1936)	75
82.3, (1937) 82.3, (1938) 83.8			
Marquette University School of Medicine.....	" " " "	" " " "	82.3,
University of Manitoba Faculty of ..	" " " "	" " " "	79.8
University of Toronto Faculty of ..	" " " "	" " " "	79
McGill University Faculty of Medicine.....	(1924)	(1924)	84.6
School	FAILED	Year Grad.	Per Cent
Emory University School of Medicine.....	(1929)	(1929)	81.3
(1938) 69.2, 71.3, 72.6			
University of Georgia School of Medicine.....	(1936)	(1936)	72.5,
Chicago College of Medicine and Surgery.....	(1917)	(1917)	66,
Jenner Medical College, Chicago.....	(1910)	(1910)	68.7
			62.7
			65

Loyola University School of Medicine.....	(1938)	69.7
University of Illinois College of Medicine.....	(1923)	65.3
University of Louisville School of Medicine.....	(1933)	73.5
Baltimore Medical College.....	(1905)	57.6
University of Michigan Medical School.....	(1931)	73.3
St. Louis University School of Medicine.....	(1926)	67.3
University of Nebraska College of Medicine.....	(1933)	71.7
Columbia University College of Physicians and Surgeons.....	(1904)	61.7
Eclectic Medical College, Cincinnati.....	(1921)	60.5
University of Oklahoma School of Medicine.....	(1937)	72.4
Jefferson Medical College of Philadelphia.....	(1908)	63
Temple University School of Medicine.....	(1913)	68.4
University of Pennsylvania School of Medicine.....	(1936)	73.7
University of Tennessee College of Medicine.....	(1933)	72.4
(1934) 72.8		
University of Toronto Faculty of Medicine.....	(1912)	54.5
(1920) 73.2, (1926) 71.7		

\* This applicant has received the M.B. degree and will receive the M.D. degree on completion of internship.

## Book Notices

**The Radiology of Pulmonary Tuberculosis.** By J. E. Bannen, M.B., Ch.B., D.M.R.E., Radiologist, Hull Corporation Hospitals and Tuberculosis Clinics. Fabrikoid. Price, \$4.50. Pp. 156, with 39 illustrations. Baltimore: William Wood & Company, 1937.

This splendid piece of work is complete in every detail and yet very brief. Bannen begins his monograph with a discussion of the technic of radiography and a brief mention of the principles of tomography and kymography. In the second chapter the author discusses from an anatomic and radiologic standpoint the normal lung with its anomalies and variations. He also discusses the topographic anatomy of the lung and the diaphragm and mediastinum as they appear in the normal roentgenogram of the chest. With this as a foundation he devotes seven chapters to the interpretation of the roentgenogram of the chest, translating the various shadows seen in terms of the underlying pathologic condition, e. g. atelectasis, emphysema, bronchiectasis, exudative lesions, caseation, fibrosis, calcifications, cavitations. He also adapts the various shadows to the pathogenesis of tuberculosis and to the pathologic physiology, and the interpretation of the chest roentgenogram after bronchography and artificial collapse therapy. One chapter is devoted to the differential diagnosis of the x-ray shadows which simulate the shadows of the various types of pulmonary tuberculosis, such as pneumonia, bronchopneumonia, Hodgkin's disease, silicosis and passive congestion of the lung due to heart disease. The illustrations are reduced negative prints of the roentgenogram of the chest, diagrammatic sketches and photographs. The only criticism is that the book is rather brief for the beginner and leaves much to the knowledge of the general practitioner. This lack is compensated for by a fine list of references after each chapter. The value of the book as a contribution to the literature lies in the fact that it stimulates the general practitioner to learn to interpret his x-ray plates, leads him to understand the importance of the roentgenogram in the diagnosis and treatment of pathologic conditions of the chest and to appreciate the importance to treatment and prognosis of serial roentgenograms at three to six month intervals. This contribution also reveals the importance of stereoscopic plates for the first roentgenogram and also the value of oblique and lateral views. However, the cardinal effect of the monograph on the general practitioner is to stimulate more frequent use of the roentgenogram in the diagnosis of chest conditions, a form of stimulus which will do much for the early diagnosis of pulmonary tuberculosis.

**Die Psychiatrie im Dienste der Wehrmacht.** Von Adolf Heidenhain. Mit einem Vorwort von Professor Dr. J. Lange. Boards. Price, 2.80 marks. Pp. 53. Leipzig: Georg Thieme, 1938.

From an American point of view, perhaps, treatment of psychopathology should be the most important medical function in Germany today; but the most recent literature which has come out in psychiatry and psychology has dealt largely with the improvement of the thinking processes of the German people through sterilization and what is euphemistically known as race improvement. Since the problem of restoration of German morale seems to depend on rebuilding its armed forces, it is not surprising that the present volume, which deals with psychiatry in the service of rearmament, has appeared. What

is surprising is the fact that it is only a small pamphlet, that it is not particularly scientific, that it is not deeply thought out and probably from the point of view of military surgeons and military psychiatrists is not particularly important. However, the author does acknowledge that it is only an introduction to the subject and not a complete survey. The problems of psychiatry in the army, as presented by Heidenhain, seem to be principally those which would confront the mental physician in dealing with large groups of individuals who have been torn from their homes, who are more or less segregated from females, and who are more or less unselected as to mental capacities. Feeble-mindedness is barely touched on, the implication being that it is not important to the military. Although much of it is extremely interesting, presenting the author's observations of the recent recruit called to the colors in his country, the important feature that appears in this study is the fact that mental and nervous disease is not particularly significant, either because the age of onset of these diseases is above that of the recruits or because the chief mental problem observed in the old German army of homesickness has now been done away with, as recent recruits have been brought up in various camps from early childhood and assume cantonment life to be a normal life. Alcoholism is very important but, of course, as one would expect in such a young group, it is usually of an acute form, not chronic. There is no attempt made in this book to show how mental hygiene can be used in adjusting these individuals and very little insight is shown into secondary political psychiatric problems which naturally arise in such a dominant army and navy. There is a bibliography which is not as extensive as it could be, perhaps, but it does draw on some foreign sources. This little volume will probably be more of cultural and political interest to Americans, be they physicians or not, than of any particular medical importance.

**General Relief Statistics for the Fifteen-Month Period January 1936 Through March 1937.** Works Progress Administration, Harry L. Hopkins, Administrator. Corrington Gill, Assistant Administrator. Emerson Ross, Director, Division of Research, Statistics and Records. Prepared under the direction of T. E. Whiting. Paper. Pp. 57. Washington, D. C.: United States Government Printing Office, 1938.

The Social Security Board became responsible for the collection and publication of general relief statistics beginning in April 1937. This bulletin covers a period of fifteen months from January 1936 through March 1937, and the data supersede the figures for these months published previously in General Relief Statistics Bulletins issued by the FERA and for a time issued jointly by this agency and the Social Security Board. The figures presented cover the number of family and single person cases and the total number of persons receiving general relief, the amount of general relief extended to cases and the total obligations incurred for relief. The term "general relief" does not include wages paid for work done under the Works Program, loans or grants made by the Farm Security Administration, aid to veterans or old age assistance, aid to dependent children or aid to the blind. The term "case" as used denotes a family or single person. The estimated number of "cases" receiving general relief in the country at large rose to a winter peak of 1,723,000 in February 1937 and in the following month declined to 1,681,000. Between March 1936 and March 1937 the number of cases declined 16.4 per cent, whereas between January 1936 and January 1937 the number of cases on general relief declined 25.1 per cent. The changes in the number of cases receiving general relief during the fifteen month period covered by this bulletin were influenced by variations in works program employment, variations in seasonal needs, changes in private employment, availability of funds, and administrative policies of state and local relief administrations; the great diversity of financial and administrative policies contributed to differences from state to state in the extent to which general relief needs were met. During February 1936 public aid in the form of old age assistance, aid to dependent children and aid to the blind under the Social Security Board was inaugurated in a number of states, and the expansion of this program in subsequent months resulted in removing a large number of persons from the general relief rolls. The effect of private employment on general relief became especially evident after February 1936. However, the employ-

ment gains in the spring and summer of 1936 were somewhat offset by the seasonal decline in the automobile and coal mining industries during the summer, although private employment gained momentum after August 1936. The longshoremen's strike on the Pacific Coast and strikes in the automobile industries in 1937 caused a temporary rise in the number of cases receiving general relief in the areas affected. In January 1936 it is estimated that about 7,211,000 persons, or 5.6 per cent of the total population of the country, received general relief. In March 1937 this number was reduced to 5,333,000, a decline of 26 per cent. The amount of general relief issued was \$47,915,000 in January 1936 and \$39,679,000 in March 1937, whereas the amount of general relief extended declined only 17.2 per cent between January 1936 and March 1937. The drop in the number of cases receiving general relief amounted to 24.1 per cent, indicating that during this period there was an increase in the average amount per case receiving general relief. The total amount extended to cases for general relief during the period January 1936 through March 1937 was \$553,453,000. It was impossible to obtain complete reports for all the states for this fifteen month period, and it was necessary therefore to prepare estimated totals. All estimates for the continental United States for this fifteen month period are therefore subject to revision on the receipt of more adequate data. The bulletin states that the estimates given are substantially correct and that any further revisions will be relatively small. A great part of this bulletin is a tabulation of the data referred to by states and by month. General and emergency relief data for the preceding three year period may be found in greater detail in the Statistical Summary of Emergency Relief Activities, published by the FERA, while figures for the period beginning with April 1937 may be obtained from publications of the Social Security Board.

**O líquido cefalo-raquidiano em clínica.** Pelo Oswaldo Lange, 3.<sup>o</sup> assistente da Clínica neurológica da Faculdade de medicina da Universidade de São Paulo. Prefácio do Prof. A. de Almeida Prado. Paper. Price, 20 milreus. Pp. 200, with 27 illustrations. São Paulo, Cayelras & Rio de Janeiro: Companhia Melhoramentos de São Paulo, 1937.

The author discusses the physiology and anatomy of the brain and spinal cord, with a discussion on the origin of the cerebrospinal fluid. There are twelve chapters, each dealing with a clinical entity. These clinical conditions are illustrated by charts and by reproductions of photographs. The most valuable section is the one which deals with the manometric pressure and the examination of the spinal fluid in various types of spinal blockade. There is little information on the subject of cerebrospinal fluid contained in this book which is not already known in the American literature. There are occasional references to Cushing and his associates, but as a rule the references at the bottom of the page refer to foreign literature.

**Food and Physical Fitness.** By E. W. H. Cruickshank, M.D., D.Sc. M.R.C.P., Regius Professor of Physiology, The University of Aberdeen. Foreword by Sir John B. Orr, D.S.O., M.D., D.Sc., Director of the Rowett Institute, Aberdeen. Cloth. Price, \$2. Pp. 148. Baltimore: William Wood & Company, 1938.

This book is based on a series of public lectures on nutrition at the University of Aberdeen and it is directed to the general public. While written interestingly, it contains a few points which careful editing would eliminate or correct and thereby add to the value of the book. On page 21 reference is made to the work of "Chittenden in Boston." Boston and New Haven are related in more ways than one, but they are still distinguishable. On page 29, cheese is discussed without reference to the great differences in composition of various kinds of cheese. On page 31 appears the interesting assertion that "uric acid is not entirely a waste product; a certain amount is excreted by the kidneys, but some is reabsorbed by them in order to keep the uric acid content of the blood at its physiological level." In the chapter on minerals "Iron" appears as a heading on page 55 and again on page 60. There is further need for improvement in the headings of the chapter on vitamins and dietary deficiency diseases. On page 90 "Vitamin E" appears as a primary heading and "Vitamin Standards" as a subheading. On page 92 the unit of vitamin C is stated as "the vitamin activity of 0.05 cc. of ascorbic acid." Obviously this should be "0.05 mg." of the pure crystalline ascorbic acid. On page 93 there is a footnote to a table on the vitamin content of foods which erroneously

states that vitamins A and D are in international units and the others (vitamins B<sub>1</sub>, C and G) in Steenbock units. There is one really important criticism and that with regard to the section on the effect of pasteurization on milk. This section now reads as though the heat treatment of milk is of questionable value which, of course, it is not. Thus the author lists six things which happen to milk when it is boiled, namely the destruction of lactic acid bacilli, the inactivation of enzymes, the loss of vitamins, the loss of part of the iodine, a slight diminution of the lime salts due to the rendering insoluble of a small amount of calcium which adheres to the side of the pan in which the milk is boiled and, finally, the denaturation of proteins so that "the casein is no longer the natural protein as found originally in the milk." Contrast this type of statement, which is intended for the general public, with two statements issued by the Council on Foods relative to the pasteurization of milk: "The public should demand pasteurized milk for drinking and the use of pasteurized milk in milk products. The dairy trade should universally adopt pasteurization in the interest of public health." It has also been stated that "in the opinion of the Council, all milk used for infant feeding should be boiled." There should be no confusing of the issue in the public's mind and, in this respect, the book falls short of its purpose.

**Fearfully and Wonderfully Made: The Human Organism in the Light of Modern Science.** By Renée von Eulenburg-Wiener. Cloth. Price, \$3.50. Pp. 472, with 18 illustrations. New York: Macmillan Company, 1938.

This book contains an extraordinary amount of material, fairly well digested and reasonably accurate. It is not a book for the serious student but should be valuable as a popular presentation. It attempts to present factual detail about human anatomy and physiology in a manner understandable to the layman. In this it is probably successful. However, the author rides certain hobbies, such as the importance of optical isomerism and the philosophical implications of the quantum theory, to an absurd degree. For this defect the publishers are perhaps as much to blame as the author, in not having obtained competent criticism. It will be worth while to list a random sample of errors in fact. Page 4: "The chemist is unable to form [organic] compounds in such a manner that they will exhibit the property of optical rotation." Page 70: "Chlorine is more or less equally distributed between the cells and the surrounding fluid . . . of the body." As a matter of fact it is more than likely that most body cells contain no chloride whatever. Page 85: "The greatest amount of work done by the heart is expended in overcoming resistance in the circulatory system; only a small amount of the total energy utilized determines the rate of the blood flow." The second clause is incorrect if the first is true, as it is. Page 88: "The elasticity of the arterial vessels is of great importance. It is partly due to this elasticity that the pressure of the blood decreases as the blood enters smaller and smaller vessels. Decreased elasticity of the arterial walls is one of the factors which brings about increased blood pressure." The first sentence is obviously true, the second is absolutely incorrect, and the third is open to great argument. These examples are among many more in the same category.

With regard to the more definitely philosophical aspects of the work it can be said that the general principle is the application of modern non-materialistic physical ideology to biology. There is a good deal of loose reference to such ideas as for example that an increase in entropy represents senescence and death, and that "living substance like all matter is ultimately resolvable into sources of radiant energy and therefore may be considered but another form of radiant energy." The latter assertion is objectionable if for no other reason than because it suggests "another form" of energy in living from those in nonliving systems. The author (p. 446) makes the gratuitous assertion that "biology holding to the materialistic explanation of life has to restrict itself to isolated processes in the elucidation of living phenomena." If this were true, of course, the author would be right in her further remarks about its inadequacy. But such a restriction is unnecessary and no mechanist would allow it. The author has set up her own inadequate straw man to knock down. Another statement requiring con-

troversion is that "the uncertainty principle [of Heisenberg] rules in the biological sciences to a still greater extent [than in the physical]." There is not the slightest evidence that this principle is of any special consequence in biologic activity. Certain noted physicists have indicated in popular books that they imagine the "uncertainty principle" might solve the enigma of the freedom of the will and other things physicists in general know nothing about, but it hardly seems appropriate to attach positive significance to a physicist's biologic imaginings.

**Youth Tell Their Story.** By Howard M. Bell. A Study of the Conditions and Attitudes of Young People in Maryland Between the Ages of 16 and 24. Conducted for the American Youth Commission. Paper. Price, \$1.50. Pp. 273, with illustrations. Washington, D. C.: American Council on Education, 1933.

Once again the obvious is proved by an elaborate investigation. The American Youth Commission and the American Council on Education have discovered and assembled detailed evidence to prove that in the lower income classes the children must help support the family, that they receive less medical and dental care and that they live in houses with fewer conveniences. The unemployed youth desire a home and family, but marriage is delayed. They left school younger than those in the higher income classes, and 40 per cent of those that left did so for economic reasons, while they still wish more education. They get poorer jobs. They do not attend church. They are looking to the government for help but want work rather than relief. Only 55 per cent of them are sufficiently interested in politics to vote. All this is stated statistically and illustrated by diagrams on the basis of questionnaires circulated in the city of Baltimore and held to be representative of the United States.

**The Diet Book for Doctor, Patient and Housewife with Specimen Menus for One Week and Recipes.** By Marguerite Requa Rea (Mrs. Alec L. Rea). With a foreword by Sir James Purves-Stewart, K.C.M.G., C.B., M.D., Physician to Westminster Hospital. Third edition. Cloth. Price, \$2.25. Pp. 255. New York & London: Oxford University Press, 1937.

This book has been prepared primarily for the housewife and cook to enable them more adequately to prepare foods for the sick. In the present edition, additional dietaries suitable for maladies not contained in the previous editions have been included. Among these are the ketogenic diet and diets for nephritis. The first portion of the book outlines the meals to be employed in various conditions, while the second section is devoted to recipes and tables.

The value of the book for those in this country is limited by the inclusion in the meals of certain products not available. Trade preparations are liberally employed. Even with these limitations, the material will find a field of usefulness for those who must prepare food for the sick and convalescent. The physician may also find information of value to aid him in the planning of certain dietaries.

**Medical Service in Industry and Workmen's Compensation Laws.** Prepared by M. N. Newquist, A.B., B.Sc., M.D. Paper. Pp. 70, with 11 illustrations. Chicago: American College of Surgeons, 1933.

The natural interest of the American College of Surgeons in the treatment of industrial injuries has led to a study of industrial medicine, the organization and functions of industrial medical and surgical service, and workmen's compensation, all of which are covered in this report. The position is consistently maintained that such service should be confined to plant conditions and that, "if for no other reason than a sense of fair competition, industry should go no further in the actual treatment of non industrial injuries and illnesses than to give reasonable first aid and advice to those on duty." This leaves a wide and valuable field for medical activity in plant sanitation, physical examinations, safety measures and, in short, guarding against all conditions within the plant that may prove harmful to health. Statistical studies of the extent of medical service in industry and its effect on accidents and disease are presented. There is an excellent summary of the history and essential features of workmen's compensation laws and insurance systems in industry. The report is a compact presentation of information of value to any one interested in industrial medicine.

**Baby's Point of View: The Psychology of Early Babyhood.** By E. Joyce Partridge, F.R.C.S., L.R.C.P. Cloth. Price, \$1. Pp. 94. New York: Oxford University Press, 1937.

Here is an attempt to explain behavior problems in childhood and neurotic conditions of adulthood by showing that the baby has a good deal of understanding at the early age of 2 to 3 weeks and that any drastic upheaval in its life at so early an age may be the basis for neurotic tendencies later in life. It is recommended that the mothers use their maternal instinct and intuition in caring for the infant rather than the rules of inflexible regularity of feeding and sleeping. In other words, "mothering" is advocated to prevent the child from becoming hysterical because of fear and crying. Breast feeding and the closeness of the mother, it is stated, keep the baby from feeling unsafe. This book with its new point of view will be found interesting to the physician as well as to the mother and nurse.

**Intercity Differences in Costs of Living in March, 1935, 59 Cities.** By Margaret Loomis Stecker. Works Progress Administration, Division of Social Research, Research Monograph XII. Paper. Pp. 216. Washington, D. C.: United States Government Printing Office, 1937.

The purpose of this study was to determine the costs of living in fifty-nine separate cities, first at a "basic maintenance level" and second at an "emergency level." The costs of living are determined by the retail prices of the goods and services essential to maintaining these levels. The family was assumed to consist of the father, mother, a boy aged 13 and a girl aged 8, and the figures to apply to March 1935. At that time it was determined that the average expenditure required in the fifty-nine cities to procure the "maintenance level" would be \$1,261 and the "emergency level" \$903. As might be expected, the lowest cost was found in the South Central states, but the closest correlation was in the increase of cost according to the size of the cities. The average cost for medical care was \$52.32 a year. This medical care is made up not only of the personal services of physicians, dentists, nurses and hospitals but also of a list of drugs and appliances purchased by the patients. There might easily be some question as to these drugs and appliances.

**The American Illustrated Medical Dictionary: A Complete Dictionary of the Terms Used in Medicine, Surgery, Dentistry, Pharmacy, Chemistry, Nursing, Veterinary Science, Biology, Medical Biography, Etc., with the Pronunciation, Derivation, and Definition.** By W. A. Newman Dorland, A.M., M.D., F.A.C.S., Lieut.-Colonel, M. R. C., U. S. Army. With the collaboration of E. C. L. Miller, M.D. Eighteenth edition. Fabrikoid. Price, \$7; Thumb indexed, \$7.50. Pp. 1,607, with 942 illustrations. Philadelphia & London: W. B. Saunders Company, 1933.

New terms appear in medical literature these days with astonishing rapidity. In the present edition of this well known dictionary, 3,000 new words have been defined. As a result the text is increased by more than sixty pages. The largest number of revisions and additions appear in the fields of endocrinology, immunology, pathology and biopsychology. More than 100 new tests are described. In the development of this dictionary, the editorial department of the American Medical Association cooperates, bringing the choice of terms into accord with the style book of the American Medical Association Press. An interesting feature of the dictionary is the portraits of distinguished investigators, together with brief biographic notes.

**Major Endocrine Disorders.** By S. Lery Simpson, M.A., M.D., M.R.C.P. Physician, Wilkesden General Hospital, London. Foreword by Sir Walter Langdon-Brown, M.A., M.D., F.R.C.P. Cloth. Price, 10s. 6d. Pp. 181, with 21 illustrations. London: John Bale Medical Publications Ltd., 1933.

Practitioners of medicine should welcome this authoritatively written, terse and practical summary of endocrinology. It is a precise survey of modern endocrinology that will be invaluable for purposes of orientation. While the author makes no pretense of writing a complete textbook on the subject, he has succeeded in presenting an unusual amount of well correlated data in a most lucid manner. Useless and confusing theoretical detail has been omitted from the book and the work reflects the author's rich practical and scientific background. The major endocrine syndromes of the thyroid, parathyroid, pituitary, adrenals, gonads and pancreas are discussed with masterful brevity. The work merits a place in the library of every practicing physician.

**A Prairie Doctor of the Eighties: Some Personal Recollections and Some Early Medical and Social History of a Prairie State.** By Francis A. Long, M.D. With two chapters on "The Prairie Doctor's Wife." By Maggie E. Long. Cloth. Price, \$2.75. Pp. 223, with 34 illustrations. Norfolk, Nebraska: Huse Publishing Company, 1937.

Here Dr. Francis A. Long, for many years editor of the *Nebraska State Medical Journal*, presents the story of his career in medicine, which includes as well the early days of development of the state of Nebraska. The work is a straightforward account with little literary elaboration but one which is certain to be of interest to every one who knew of Dr. Long and his work in Nebraska. Two additional chapters by Mrs. Long reveal the attitudes and interests of the doctor's wife.

**The Psychology of Speech.** By Jon Elsenon. Cloth. Price, \$2.25. Pp. 280, with 5 illustrations. New York: F. S. Crofts & Co., 1938.

After an introduction which considers the nature and origin of speech, its psychology and development, the author concerns himself with deviations in speech resulting from disorders in personality and, finally, with the speaker-audience relationship. The work seems to be based largely on earlier rather than more modern psychology. It presents nevertheless a concise consideration of that element of human conduct which most certainly distinguishes man from the animal.

## **Bureau of Legal Medicine and Legislation**

### **MEDICOLEGAL ABSTRACTS**

#### **Malpractice: Failure to Discover Fracture of Hip.—**

The plaintiffs, husband and wife, were in an automobile accident near Springfield, Ill., Aug. 9, 1933, and the wife was severely injured. She was taken to a hospital at Springfield and the defendant physicians were called to attend her. They found the patient in an unconscious condition and their examination disclosed a skull fracture extending from the frontal bone almost to the base of the skull. The patient remained unconscious for four or five days and her head injury was of such a serious nature that her life was despaired of. She remained in the hospital for about a month, during which time she gave many indications that she was suffering pain in her right hip but apparently no examination of the hip was made. On September 7 she was returned to her home in Kansas City by ambulance and by train, at which time the defendants' connection with the case terminated. Subsequently another physician observed that the wife's right leg was shorter than her left and a roentgenogram disclosed an unimpacted fracture of the neck of the right femur. A Whitman reconstruction operation was successfully performed but the right leg remained permanently short. The plaintiffs then sued the defendants, alleging malpractice. At the conclusion of the plaintiffs' evidence, the United States district court for the southern district of Illinois, southern division, directed the jury to return a verdict for the defendants and judgment was entered thereon. The plaintiffs then appealed to the United States circuit court of appeals, seventh circuit.

The district court directed the verdict for the defendants on the theory that the first duty of the physicians was to save the patient's life, if possible, and that even though they might have been negligent in not discovering the condition of the hip, yet they could not be held for damages unless the evidence showed that they could have safely examined and cared for the injured hip without endangering her life while she was undergoing treatment for the serious condition of her head. With this theory, the circuit court of appeals found itself in disagreement. The error in the theory was that it placed on the plaintiffs the burden, in the first instance, of proving that the patient was in a fit condition to have her hip examined and cared for without endangering her life. This placed on the plaintiffs a greater burden than the law warrants. Conceding that a prima facie

case of negligence had been established by the plaintiffs, the burden was on the physicians, if they desired to avail themselves of that defense, to prove that the patient's condition was such that examination or treatment of her hip would have endangered her life. Aside from the injury to the patient's head there was no doubt that the plaintiffs established a prima facie case of negligence, with proximately resulting damages. It may be conceded, the court said, that the head injury prevented an examination and treatment of the hip sooner than five days after the injury, for the patient was unconscious during that time. The record disclosed, however, that the patient was in a condition to undergo an examination of her hip when she regained consciousness.

The physicians owed the patient the duty of making such examination and giving her such treatment as her physical condition and the skill of their profession in that community warranted. They did nothing so far as the injury to her hip was concerned in the way either of curative or of palliative measures. It was fairly inferable from the record, the court said, that where there is a fracture of the femur, which is not impacted, there should be an apposition of the broken ends of the bone as soon as possible, if by so doing the patient's life is not endangered. That injury proximately resulted to the patient from the physicians' negligence seemed to the court to be clear. The judgment of the district court was therefore reversed, and the cause remanded with instructions to grant a new trial.—*Weintraub v. Rosen*, 93 F. (2d) 544.

**Workmen's Compensation Acts: "Any and All Occupational Diseases" Construed.**—The claimant sold tickets in a booth in the street outside the lobby of a moving picture theater. This booth was heated by an electric heater which the claimant could turn on or off as she wished. The alternate heat and cold to which she was subjected, she claimed, caused blotches to appear on her legs and caused her feet to become numb and weak. She complained about this condition to her employer and he sent her to a physician. On the way to the physician's office she fell and fractured her left ankle, the fall being attributed to the weakness of her feet. The industrial board awarded compensation, finding that her injuries were accidental injuries that arose out of and in the course of her employment and that the disease from which she suffered was an occupational disease compensable under the workmen's compensation act. The supreme court, appellate division, New York, affirmed the award (297 N. Y. S. 960) and the employer and its insurance carrier appealed to the Court of Appeals of New York.

The workmen's compensation act of New York includes as accidents certain named occupational diseases and then follows with a clause providing compensation for "any and all occupational diseases." It was conceded that the claimant was not suffering from any occupational disease specifically named in the act. She claimed, however, that her condition was included in the general language "any and all occupational diseases." But, said the court, the wording of the act clearly indicates that only "occupational diseases" are compensable, not all diseases contracted during the course of employment. The act does not define the term "occupational diseases," but it indicates more clearly than by definition what is meant by enumerating certain diseases, linking each with the process used by the employee by which the disease is caused, such as lead poisoning contracted in a process involving the use of or direct contact with lead. Every such disease is thereby required to be actually caused in the course of the employment and from the particular work the employee is performing. Certain sections of the act refer to occupational diseases as those due to the nature of the employment and contracted therein and expressly limit compensation to those diseases. Thus an occupational disease is one which results from the nature of the employment, and by nature is meant not those conditions brought about by the failure of the employer to furnish a safe place to work but conditions to which all employees of a class are subject and which produce the disease as a natural incident of a particular occupation and attach to that occupation a hazard which distinguishes it from the usual run of occupations. Compensation is restricted, there-



fore, to disease resulting from the ordinary and generally recognized risks incident to a particular employment and usually from working therein over a somewhat extended period. Such a disease is not the equivalent of a disease resulting from the general risks and hazards common to every individual regardless of the employment in which he is engaged.

In the present case the claimant handled cash and theater tickets and it was obvious to the court that this work in and of itself could not have caused the leg injury or disease. The disease which befell her, therefore, was caused not by the nature of her employment but by the failure of her employer to furnish her with a proper and safe place in which to work. There being no evidence whatever to sustain the finding that the claimant contracted an occupational disease in the course of her employment, the court concluded that the award could not be sustained on that ground.

The court, however, thought that the award could be sustained on the ground of accidental injury arising out of and in the course of employment. The fall occurred while the claimant, pursuant to the directions of her employer, was on her way to the physician. The fall was the result of weakness of the claimant's feet which was caused, not by an internal disorder, disease or illness having no connection with her employment, but by the conditions of her employment. The order awarding compensation was therefore affirmed.—*Goldberg v. 954 Marcy Corporation (N. Y.), 12 N. E. (2d) 311.*

**Accident Insurance: Diabetes, and Death from Septicemia Following a Burn.**—The defendant promised to pay the plaintiff, as beneficiary, a certain amount if the insured lost his life as the result of bodily injuries "caused directly and independently of all other causes by violent and accidental means." Among the risks excluded was death "caused wholly or partly, directly or indirectly, by disease or bodily or mental infirmity or medical or surgical treatment therefore." The insured had an ingrown toenail which was partly removed by a chiropodist. In an effort to heal the toe, the insured exposed his foot to the rays of a heat lamp, which he had been in the habit of using for therapeutic purposes. On this occasion he fell asleep and the exposure continued for a much longer time than intended, causing a severe burn on the instep. A blister developed, which subsequently broke, resulting in an open and visible wound, and septic infection set in. The leg was amputated, but the insured died of streptococcic septicemia. For three years prior to his death, the insured had suffered from diabetes mellitus. The insurance company repudiated liability on the ground that the death of the insured, if not due solely to the diabetes, was at least caused primarily by it and not by accidental injury independently of all other causes. The trial court gave judgment for the plaintiff, and the company appealed to the Supreme Court of Pennsylvania.

The trial court found as facts that the diabetes of the insured was kept under control by diet and insulin and that it did not render him more liable to a burn or to infection, nor did it in any way interfere with their treatment. Had the death resulted from the combination of the injury and the diabetes, said the Supreme Court, then, even though the injury were the proximate and the diabetes merely the remote cause, there would be no liability under the policy. In view, however, of the trial court's findings that the diabetes in no way contributed to the death of the insured and that he probably would have died of the injury alone, this defense was not available to the company. There was no merit, the court continued, in the defendant's contention that the death was not caused by "violent and accidental means." The term "violent" signifies merely that a physical force, however slight, is efficient in producing a harmful result. Here the impact of the heat rays blistered and ultimately broke the tissues of the foot. In addition to being "violent," the means were also "accidental." A means is not accidental when employed intentionally, even though it produces an unintended result. But if, in the act which precedes the injury, something unforeseen, unexpected, unusual occurs, which produces the injury, the injury has resulted through accidental means. Here the means were employed intentionally only up to the time when the insured fell asleep. He did not compose himself to sleep; the falling asleep was an accident. Thereafter, the

exposure of his foot to the heat was unintentional and involuntary and the means which produced the injury thus became "accidental."

The clause of the policy excluding liability for injury caused by medical treatment for bodily infirmity did not relieve the company from liability, the court continued. While the application of the rays undoubtedly was for therapeutic purposes and therefore constituted "medical treatment," it was not for "bodily infirmity." The latter term in insurance policies, the court pointed out, has uniformly been construed to mean a condition of a settled and substantial character materially impairing the bodily processes, and not to cover minor physical defects and ailments which are frequent incidents of life, speedily forgotten, and not affecting the general soundness and healthfulness of the system. Even a dormant duodenal ulcer has been held not to be a disease or bodily infirmity within the meaning of those terms in a policy. *Silverstein v. Metropolitan Life Insurance Co.*, 254 N. Y. 81, 171 N. E. 914. The same has been ruled in regard to burns about the ankles, leaving scar tissue, *McClure v. World Ins. Co.*, 126 Neb. 676, 254 N. W. 393; and to intestinal adhesions resulting from a herniotomy. *Druhl v. Equitable Life Assurance Society*, 56 N. D. 517, 218 N. W. 220, 60 A. L. R. 962. An ingrown toenail, said the court in this case, no more constitutes "bodily infirmity" than would an impacted tooth. The judgment of the trial court for the plaintiff was affirmed.—*Arnsstein v. Metropolitan Life Ins. Co. (Pa.)*, 196 A. 491.

## Society Proceedings

### COMING MEETINGS

- Academy of Physical Medicine, Washington, D. C., Oct. 24-26. Dr. Herman A. Osgood, 144 Commonwealth Ave., Boston, Secretary.
- American Academy of Ophthalmology and Oto-Laryngology, Washington, D. C., Oct. 9-14. Dr. William F. Wherry, 107 South 17th St., Omaha, Executive Secretary.
- American Association for the Study of Goiter, Washington, D. C., Sept. 12-14. Dr. W. Blair Mosser, 133 Biddle St., Kane, Pa., Secretary.
- American Association of Obstetricians, Gynecologists and Abdominal Surgeons, White Sulphur Springs, W. Va., Sept. 22-24. Dr. James R. Bloss, 418 Eleventh St., Huntington, W. Va., Secretary.
- American Association of Railway Surgeons, Chicago, Sept. 19-21. Dr. Daniel B. Moss, 547 W. Jackson Blvd., Chicago, Secretary.
- American College of Surgeons, New York, Oct. 17-21. Dr. George W. Crile, 40 East Erie Street, Chicago, Chairman, Board of Regents.
- American Congress of Physical Therapy, Chicago, Sept. 12-15. Dr. Richard Kovacs, 1100 Park Ave., New York, Secretary.
- American Hospital Association, Dallas, Texas., Sept. 26-30. Dr. Bert W. Caldwell, 18 East Division St., Chicago, Executive Secretary.
- American Public Health Association, Kansas City, Mo., Oct. 25-28. Dr. Reginald M. Atwater, 50 West 50th St., New York, Executive Secretary.
- American Roentgen Ray Society, Atlantic City, N. J., Sept. 20-23. Dr. Carleton B. Pearce, University Hospital, Ann Arbor, Mich., Secretary.
- Associated Anesthetists of the United States and Canada, New York, Oct. 17-21. Dr. F. H. McMechan, 318 Hotel Westlake, Rocky River, Ohio, Secretary General.
- Association of Military Surgeons of the United States, Rochester, Minn., Oct. 13-15. Dr. H. L. Gilchrist, Army Medical Museum, Washington, D. C., Secretary.
- Central Association of Obstetricians and Gynecologists, Minneapolis, Oct. 6-8. Dr. William F. Mengerl, University Hospitals, Iowa City, Secretary.
- Central Society for Clinical Research, Chicago, Nov. 4-5. Dr. Lawrence D. Thompson, 4932 Maryland Ave., St. Louis, Secretary.
- Clinical Orthopedic Society, Nashville, Tenn., and Birmingham, Ala., Oct. 7-8. Dr. H. Earle Conwell, 215 Medical Arts Bldg., Birmingham, Ala., Secretary.
- Delaware Medical Society of, Dover, Oct. 10-12. Dr. Allan V. Gilliland, Smyrna, Secretary.
- Indiana State Medical Association, Indianapolis, Oct. 4-6. Mr. Thomas A. Hendricks, 23 East Ohio St., Indianapolis, Executive Secretary.
- Kentucky State Medical Association, Louisville, Oct. 3-6. Dr. Arthur T. McCormack, 620 South Third St., Louisville, Secretary.
- Michigan State Medical Society, Detroit, Sept. 19-22. Dr. L. Fernald Foster, 311 Center Ave., Bay City, Secretary.
- Mississippi Valley Medical Society, Hannibal, Mo., Sept. 28-30. Dr. Harold Swanberg, 510 Main St., Quincy, Ill., Secretary.
- Nevada State Medical Association, Reno, Sept. 23-24. Dr. Horace J. Brown, 120 N. Virginia St., Reno, Secretary.
- Omaha Mid-West Clinical Society, Omaha, Oct. 24-28. Dr. J. D. McCarthy, 107 South 17th St., Omaha, Secretary.
- Pacific Association of Railway Surgeons, Los Angeles, Oct. 7-8. Dr. W. T. Cummins, Southern Pacific General Hospital, San Francisco, Secretary.
- Pennsylvania Medical Society of the State of, Scranton, Oct. 3-6. Dr. Walter F. Donaldson, 500 Penn Ave., Pittsburgh, Secretary.
- Southwestern Medical Association, El Paso, Texas, Nov. 3-5. Dr. Orville E. Egbert, 116 Mills St., El Paso, Texas, Secretary.
- Vermont State Medical Society, Burlington, Oct. 6-7. Dr. B. F. Cook, 154 Bellevue Ave., Rutland, Secretary.
- Virginia Medical Society of, Danville, Oct. 4-6. Miss Agnes V. Edwards, 1200 East Clay St., Richmond, Secretary.
- Wisconsin State Medical Society of, Milwaukee, Sept. 14-16. Mr. J. G. Crownhart, 119 East Washington Ave., Madison, Secretary.

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1928 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

#### American Heart Journal, St. Louis

16: 1-132 (July) 1938

Dissecting Aneurysm: Study of Six Recent Cases. M. Hamburger Jr. and E. B. Ferris Jr., Cincinnati.—p. 1.  
Vectorcardiogram. F. N. Wilson and F. D. Johnston, Ann Arbor, Mich.—p. 14.

Measurement of Circulation Times and Agents Used in Their Determination. S. Daer and B. G. Slipakoff, Philadelphia.—p. 29.

Calcaneous Aortic Valve Stenosis, with Particular Reference to Its Etiology. G. Lesnick and M. J. Schlesinger, Boston.—p. 43.

The Lag-Screen Belt Electrocardiogram. G. Asher and F. Hoecker, Kansas City, Mo.—p. 51.

Observations on Passive Vascular Exercise and Other Forms of Treatment of Peripheral Vascular Disease. W. B. Kountz and J. R. Smith, St. Louis.—p. 55.

Blood Pressure Response to Epinephrine Administered Intravenously to Subjects with Normal Blood Pressure and to Patients with Essential Hypertension. T. J. Fatherree and E. A. Hines Jr., Rochester, Minn.—p. 66.

Stethograph. M. L. Lockhart, Ossining, N. Y.—p. 72.

\*Heart Sounds in Normal Children. Margaret Harper McKee, Irvington, N. Y.—p. 79.

\*Heart Sounds and Murmurs in Children with Rheumatic Heart Disease. Margaret Harper McKee, Irvington, N. Y.—p. 88.

**Heart Sounds in Normal Children.**—In order to establish normal standards, McKee made stethographic records of the hearts of 105 apparently healthy school children. Four distinct sounds invariably accompanied each heart beat, namely the first, the second, the "physiologic" third and a supposedly auricular sound, which preceded the first. The last two were low in pitch and usually of little intensity and therefore are generally inaudible. The first or second sounds, or both, are frequently split. Sinus arrhythmia was always present. The differences in the intersphygmic intervals depend on the time elapsing between the third sound and the following auricular sound. The intensities of the various sounds depend on where the microphone is placed and vary greatly with changes in the cardiac rate. At the apex a moderately low-pitched, usually faint systolic murmur was present in all instances, which suggests that too much significance should not be attached to such murmurs when they are barely audible with the stethoscope. The investigation indicates that splitting of the first or second heart sound and the presence of a third sound have no pathologic significance.

**Murmurs in Rheumatic Heart Disease.**—McKee analyzed the stethograms of 130 children between the ages of 7 and 16 years, all of whom had unequivocal histories of polyarthritis, chorea or carditis of a rheumatic type. Stethograms of children with quiescent rheumatic heart disease show the same degree of sinus arrhythmia as those of normal children. In carditis this arrhythmia may disappear. Gallop rhythm may be due, at least in some cases, to tachycardia, accentuation of the third heart sound, and lessening of the intensity of the first heart sound. Of 119 children with organic heart disease 19 per cent had abnormally loud second sounds at the pulmonic area. Otherwise the heart sounds were not outside the normal range. The apical systolic murmurs which were present in cases of mild cardiac damage appeared similar to those found in normal records except for increased intensity. With more advanced cardiac disease these murmurs became slightly higher pitched. The louder, longer apical diastolic murmurs occur in cases in which the cardiac disease is relatively severe. However, when the disease is not so far advanced the short, early, faint diastolic murmur may come and go from time to time during periods when the disease is apparently inactive. Stethograms of these children show sometimes a murmur and sometimes a third heart sound. The murmur may even come and go with respiration. There are all gradations from a simple clearcut third heart

sound to an obvious long diastolic rumble. The term murmur has been used to designate any series of waves composed of more than three vibrations. Inconstant, faint, early diastolic murmurs may be due to slight relative stenosis of the mitral valve caused by cardiectasis without enlargement of the mitral orifice.

#### American Journal of Medical Sciences, Philadelphia

196: 1-152 (July) 1938

Evolution of Parenchymal Lung Lesions in Rheumatic Fever and Their Relationship to Mitral Stenosis and Passive Congestion. B. A. Gouley, Philadelphia.—p. 1.

Role of Mitral Stenosis and of Post-rheumatic Pulmonary Fibrosis in Evolution of Chronic Rheumatic Heart Disease. B. A. Gouley, Philadelphia.—p. 11.

Site of Action of Renal Pressor Substance. A. Merrill, Atlanta, Ga.; J. R. Williams Jr. and T. R. Harrison, Nashville, Tenn.—p. 18.

Insensible Loss of Water in Diabetes Insipidus. A. H. Bryan and Mary Ann Metzger, Chicago.—p. 23.

\*Observations on Continued Use of Protamine Zinc Insulin in Patients with Severe Diabetes Mellitus. Elaine P. Ralli, H. D. Fein and F. J. Lovelock, New York.—p. 28.

Changes in Glucose Tolerance Test Occurring During and After Insulin Shock Therapy for Schizophrenia. H. Freed, with assistance of Eleanor Fortunato, S. DeW. Ludlum and E. A. Strecker, Philadelphia.—p. 36.

Effect of Benzedrine on Ciliary Movement. E. M. Boyd, Kingston, Ont.—p. 44.

\*Antidotal Action of Picrotoxin in Acute Intoxication by Barbiturates. E. A. Rovenstine, New York.—p. 46.

Prothrombin Deficiency and Bleeding Tendency in Obstructive Jaundice and in Biliary Fistula: Effect of Feeding Bile and Alfalfa (Vitamin K). K. M. Brinkhous, H. P. Smith and E. D. Warner, Iowa City.—p. 50.

Combined System Disease Without Obvious Evidence of Pernicious (Macrocytic) Anemia: Report of Eight Cases; One Autopsy. T. H. Suh and H. H. Merritt, Boston.—p. 57.

Size of Red Blood Corpuscle in Diabetes Mellitus. C. F. Mohr, Baltimore.—p. 67.

Differential Diagnosis of Traumatic Aneurysm and Arteriovenous Fistula. W. B. Porter, Richmond, Va.—p. 75.

False Positive Wassermann Reactions in Infectious Mononucleosis. A. Bernstein, Baltimore.—p. 79.

\*Tuberculosis of Intestines in Tuberculous Anthracosilicosis. R. Charr and A. C. Cohen, White Haven, Pa.—p. 83.

Effect of Sodium Chloride Deficiency on Gastric Acidity. M. H. Soley, J. B. Lagen and J. C. Lockhart, San Francisco.—p. 88.

Origin of Emotional Factors in Normal Pregnant Women. J. C. Hirst and Flora Strouse, Philadelphia.—p. 95.

Pneumococcal Meningitis with Recovery: Report of Three Cases. W. B. Allan, S. Mayer Jr. and R. Williams, Baltimore.—p. 99.

**Continued Use of Protamine Zinc Insulin.**—Ralli and her associates discuss twenty patients with severe diabetes mellitus who were continuously on protamine zinc insulin for from one to eight months or more. At the end of this time protamine zinc insulin was discontinued because it was impossible to prevent a significant degree of glycosuria. All the patients had previously been under observation and treatment for an equal or longer period of time on soluble insulin. It was impossible to transfer successfully four of the patients to protamine zinc insulin and it was discontinued at the end of from one to two months. Of the remaining sixteen, after eight months or more of this therapy it was found necessary to return seven of the patients to soluble insulin because of the occurrence of alternating periods of uncontrolled glycosuria and insulin shock. Of the remaining eleven, eight have required soluble insulin as well as protamine zinc insulin in order to control the diabetes. In three patients the diabetes was adequately controlled on protamine zinc insulin alone. It is believed that beneficial effects followed the use of protamine zinc insulin in only these three patients. One additional patient, a 15 year old girl, has been treated successfully with protamine zinc insulin alone for a period of seven months, making a total of four patients with severe diabetes successfully treated with protamine zinc insulin. Three of the successfully treated patients were found to have low basal metabolic rates. It may be that lowered thyroid activity would tend to render these patients more sensitive to the action of insulin. If this were the case, it would naturally follow that a more slowly absorbed insulin would be more effective and that less of it would be required to control the glycosuria. Possibly this may be one of the reasons for the successful response of some patients to protamine zinc insulin.

**Picrotoxin as Antidote for Barbiturates.**—Rovenstine presents four case reports as examples of the clinical effectiveness of picrotoxin as an antidote for barbiturates. The cases

reported are those in which the derivative of the drug and the amount (from 4.9 to 32.5 Gm.) taken could be established with reasonable accuracy. Three patients recovered. The patient who did not recover had taken 32.5 Gm. of sodium barbital. This is usually regarded as hopelessly fatal. The experience with these patients suggests that, in human beings, results with picrotoxin in barbiturate poisoning may be anticipated which are identical with those found by Tatum and his co-workers in laboratory animals. In addition to slow intravenous infusion of picrotoxin, active, close supervision is essential. Frequent changes in position, maintenance of body temperature, support of circulation and nutrition with intravenous fluids, frequent gastric lavage and feeding, frequent catheterization, diuretics, blood transfusion, oxygen therapy and the use of an endotracheal airway and frequent cleansing of the trachea by suction through the airway are indicated and their importance is not surpassed by the use of picrotoxin.

**Tuberculosis of Intestine.**—Charr and Cohen determined the incidence of intestinal tuberculosis in forty-two cases of tuberculous anthracosilicosis and in seventy-five cases of non-anthracosilicotic pulmonary tuberculosis that came to necropsy. Intestinal tuberculosis was present in eight of forty-two cases of anthracosilicosis. Of the seventy-five cases of non-anthracosilicotic pulmonary tuberculosis, intestinal tuberculosis was present in thirty-eight. Tuberculosis of the intestine, when it occurs in the presence of anthracosilicosis, is most frequently found in early or moderately advanced anthracosilicosis. In this stage the incidence of intestinal involvement is practically the same as in non-anthracosilicotic pulmonary tuberculosis. In the presence of far advanced anthracosilicosis intestinal tuberculosis is uncommon; only 7 per cent of twenty-eight cases showed intestinal tuberculosis. This relative infrequency of intestinal tuberculosis appears to be due to the extensive fibrosis of the lungs and the chronicity of the pulmonary tuberculosis usually present in these patients. A combination of these two conditions apparently tends to prevent the spread of tuberculous infection to other parts of the body. The incidence of intestinal tuberculosis was greater among persons less than 30 years of age in both the anthracosilicotic and the non-anthracosilicotic group. In the majority of cases of intestinal tuberculosis in anthracosilicosis there were no symptoms referable to the gastrointestinal tract. The vague abdominal discomfort frequently complained of by anthracosilicotic patients may well be due to chronic passive congestion of the gastrointestinal tract secondary to gradual myocardial failure.

### American Review of Tuberculosis, New York

38: 1-142 (July) 1938

- Skin as an Organ of Experimental Tuberculous Infection. H. Sewall and G. Duffner, Denver.—p. 1.  
Allergic and Desensitized Guinea Pigs: Study of Factors Bearing on the Problem of Immunity in Tuberculosis. H. S. Willis, C. E. Woodruff, Ruby G. Kelly and Marie Voldrich, Northville, Mich.—p. 10.  
Accessory Stomach in the Right Thorax. T. Lowry and L. J. Moorman, Oklahoma City.—p. 27.  
Isolated Hyperplastic Ulcerative Tuberculosis of the Small Intestine. S. E. Wolpaw, Cleveland.—p. 32.  
Influence of Sulfocyanates on Tuberculosis: Study of Sulfocyanates in Hypertensive Tuberculous Patient, the Tuberculous Guinea Pig and in Mediums. J. Steidl, W. Steenken Jr. and F. H. Heise, Trudeau, N. Y.—p. 50.  
Comparison of Direct Smear, Flotation-Concentration and Culture in Sputum Examination. C. R. Smith, Los Angeles.—p. 57.  
Plombage in Pulmonary Tuberculosis: Progress Report Based on Animal and Clinical Experiments with an Agar-Agar Compound. J. W. Cutler, Philadelphia.—p. 62.  
Intracutaneous Tuberculin Test: Clinical Investigation of Some Factors Involved. M. Paretzky, Los Angeles.—p. 81.  
Incidence of Tuberculosis Among Blind School Children. Camille Kereszturi, New York.—p. 96.  
Tuberculosis Survey in Chicago High Schools. J. B. Novak and J. S. Kruglick, Chicago.—p. 106.  
Tuberculosis Control in Germany. H. R. Edwards, New York.—p. 115.

### Arkansas Medical Society Journal, Fort Smith

35: 53-68 (Aug.) 1938

- Spontaneous Pneumopericardium: Report of Case. A. A. Gilbert, Fayetteville.—p. 53.  
Some Personal Experiences with the Sclerocorneal Trephine Operation. E. C. Moulton, Fort Smith.—p. 57.  
Modern Treatment of Varicose Veins. C. A. Rosenbaum, Little Rock.—p. 59.

### Journal of Clinical Investigation, New York

17: 369-538 (July) 1938

- Simple Method for Estimation of Total Protein Content of Plasma and Serum: I. Falling Drop Method for Determination of Specific Gravity. B. M. Kagan, Baltimore.—p. 369.  
Id.: II. Estimation of Total Protein Content of Human Plasma and Serum by Use of Falling Drop Method. B. M. Kagan, Baltimore.—p. 373.  
Chemical Composition of Voluntary Muscle in Muscle Disease: Comparison of Progressive Muscular Dystrophy with Other Diseases Together with Study of Effects of Glycine and Creatine Therapy. J. G. Reinhold and G. R. Kingsley, Philadelphia.—p. 377.  
\*Late Effects of Bilateral Carotid Sinus Denervation in Man: Report of Two Cases with Studies of Vascular Reflexes. R. B. Capps and G. de Takáts, Chicago.—p. 385.  
Renal Factor in Arterial Hypertension with Coarctation of the Aorta. D. A. Ryland, San Francisco.—p. 391.  
Effects on Cardiovascular System of Fluids Administered Intravenously in Man: II. Dynamics of Circulation. M. D. Altschule and D. R. Gilligan, Boston.—p. 401.  
Changes in Blood and Interstitial Fluid Resulting from Surgical Operation and Ether Anesthesia. J. D. Stewart and G. Margaret Rourke, Boston.—p. 413.  
Observations on Blood of Workmen Exposed to High Temperatures. P. L. McLain and E. S. Montgomery, Pittsburgh.—p. 417.  
\*Nature of Lowered Resistance to Infection in Diabetes Mellitus. A. Marble, H. J. White and A. T. Fernald, Boston.—p. 423.  
Actions of Crystalline Vitamin D<sub>2</sub> (Calciferol) in Chronic Parathyroid Tetany. G. Klatzkin, Rochester, N. Y.—p. 431.  
\*Cyanosis Without Sulfhemoglobinemia or Methemoglobinemia in Patients Receiving Sulfanilamide Treatment. L. C. Chesley, Jersey City, N. J.—p. 445.  
Studies of Circulation in Presence of Abnormal Cardiac Rhythms: Observations Relating to (Part I) Rhythms Associated with Rapid Ventricular Rate and to (Part II) Rhythms Associated with Slow Ventricular Rate. H. J. Stewart, J. E. Deitrick, N. F. Crane and W. P. Thompson, New York.—p. 449.  
Study of Some of Physiologic Effects of Sulfanilamide: I. Changes in Acid Base Balance. A. F. Hartmann, Anne M. Perley and H. L. Barnett, St. Louis.—p. 465.  
"Acid" Phosphatase Occurring in Serum of Patients with Metastasizing Carcinoma of Prostate Gland. A. B. Gutman and Ethel Benedict Gutman, New York.—p. 473.  
Reactions of Human Subjects to Injection of Purified Type Specific Pneumococcus Polysaccharides. M. Finland and J. W. Brown, Boston.—p. 479.  
Tissue Pressure (Intracutaneous, Subcutaneous and Intramuscular) as Related to Venous Pressure, Capillary Filtration and Other Factors. H. S. Wells, J. B. Youmans and D. G. Miller Jr., Nashville.—p. 489.  
**Carotid Sinus Denervation in Man.**—Capps and de Takáts studied the vascular reflexes of two patients on whom bilateral carotid sinus denervation was performed eight and one-half and seventeen months previously. From the results they conclude that no permanent hypertension or tachycardia resulted from bilateral carotid sinus denervation. Furthermore, at the time of examination there was no evidence of increased sympathetic activity or increased lability of the blood pressure and pulse as might be demonstrated by exercise. However, there was a definite postural hypotension. The possibility that a similar mechanism, namely loss of sensitivity of the carotid sinuses to normal physiologic stimuli, may account for the observations in certain cases of idiopathic postural hypotension is pointed out.  
**Lowered Resistance in Diabetes Mellitus.**—Marble and his associates performed twenty-five tests on twenty-three non-diabetic persons and twenty-seven tests on twenty-seven diabetic patients in order to discover the difference, if any, in the inhibitory action and phagocytic power of the bloods on beta hemolytic streptococci. The results are of an essentially negative character in that they show no significant difference between the bactericidal, bacteriostatic or phagocytic power of diabetic as compared with normal blood. Approximately the same variation of bactericidal or phagocytic power was found among the group of diabetic patients, regardless of duration, severity or state of control of the diabetes, as among the group of normal individuals selected at random. This variation is without doubt partly dependent on former chance contacts, chiefly during infections, between the persons concerned, diabetic or nondiabetic, and the specific (or to a less extent, related) bacterial strains used. Among other factors, aside from the possible influence of diabetes itself, is the variable capacity of individuals to respond to antigenic contacts. Diabetic patients who successfully combat past infections thereby develop specific immunity to roughly the same extent as do nondiabetic controls. It seems likely that the commonly occurring malnutrition, dehydration and acidosis of the poorly controlled diabetic per-

son may contribute to poor resistance in a manner which is not reflected in the type of study reported. Perhaps also one should consider more specifically the functional integrity of the fixed tissue cells, i. e. the mononuclear cells of the reticulo-endothelial system. The possibility exists that, in the uncontrolled diabetic patient the hypercholesteremia which is present not infrequently may be associated with a "blockade" of the reticulo-endothelial system with consequent lowering of its efficiency.

**Cyanosis in Patients Receiving Sulfanilamide.**—During the past year Chesley encountered eight patients in whom cyanosis developed following treatment with sulfanilamide. No significant difference was found between the calculated and the measured carbon monoxide capacities. This precludes the existence of more than minimal amounts of sulfhemoglobinemia or methemoglobinemia in these patients, all of whom had cyanosis. Experiments were carried out with methemoglobin and sulfhemoglobin to determine whether sulfanilamide would enhance the carbon monoxide capacity. Sulfanilamide had no effect on the carbon monoxide capacity of either methemoglobin or sulfhemoglobin. The frequent reactions to sulfanilamide such as headache, nausea, malaise, vertigo, lassitude, tinnitus, accelerated pulse and respiration and loss of alkali in the urine constitute the syndrome of "mountain sickness," which is caused by anoxia. If the drug does have this effect, perhaps the customary use of sodium bicarbonate with sulfanilamide is not wholly desirable. The excretion of alkali with the fall in the combining power of the blood carbon dioxide would appear to be a compensatory response to the loss of carbon dioxide blown off during the accelerated respiration. Sulfanilamide has been recommended in treating pneumonia. In pneumonia, anoxia is often already a serious complication. The fact that Marshall and Walz with seven cases, Mull and Smith in one case and the author with eight cases have not found sulfhemoglobinemia or methemoglobinemia in high enough concentration to cause noticeable cyanosis casts serious doubt on the prevalent idea that cyanosis following sulfanilamide is usually attributable to these hemoglobin derivatives. This is not to deny that in some cases the cyanosis may be so caused. Discombe did find considerable sulfhemoglobinemia in six of seven cases. He attributed this to the concurrent use of magnesium sulfate, which presumably causes an enterogenous sulfhemoglobinemia perhaps catalyzed by sulfanilamide. Paton and Eaton found four of nineteen patients to have a methemoglobinemia, which was proved spectroscopically. From this it is concluded that before cyanosis in a given case is attributed to sulfhemoglobinemia or methemoglobinemia these pigments must be identified and shown to be present in such concentration as would give the observed degree of cyanosis.

### Journal of Immunology, Baltimore

35: 1-74 (July) 1938

- Second Attacks of Experimental Poliomyelitis in Macacus Rhesus Monkeys: H. Immunity or Lack of Immunity to Homologous and Heterologous Strains of Virus. J. A. Toomey, Cleveland.—p. 1.
- Experiments with Staphylococcus Enterotoxin. C. E. Dolman, Vancouver, B. C., and R. J. Wilson, Toronto.—p. 13.
- \*Immunization of Respiratory Tract: Comparative Study of Antibody Content of Respiratory and Other Tissues Following Active, Passive and Regional Immunization. T. E. Walsh and P. R. Cannon, Chicago.—p. 31.
- Response in Horse to Mexican Typhus Infection. M. Ruiz Castaneda and J. Vargas-Curiel, Mexico City, Mexico.—p. 47.
- Phospholipids and Cholesterol in Plasma of Immunized Horses. A. Wadsworth and L. W. Hyman, Albany, N. Y.—p. 55.
- Analysis of Alcohol-Ether Extract of Horse Serum. L. W. Hyman, Albany, N. Y.—p. 71.

**Immunization of Respiratory Tract.**—Walsh and Cannon carried out experiments which demonstrate that following active or passive general immunization antibodies tend to be distributed rather uniformly through the tissues and that the ratio of tissue antibody to serum antibody is, on the average, between 1:10 and 1:15. The antibody titer of the tissues of the respiratory tract (nasal mucosa and lungs) following active regional vaccination is consistently higher than that of the other tissues tested, and the tissue antibody to serum antibody ratio of the nasal mucosa and of the lungs is, on an average, about 1:5. The method of extraction of the tissues has been improved and this has eliminated the possibility of nonspecific flocculins or

group agglutinins confusing the results, particularly in the lower dilutions. Several explanations for the consistently higher tissue antibody to serum antibody ratio of the regionally immunized tissues are possible. It is suggested that the probable explanation for the observations is that antibodies are formed locally in the regionally stimulated tissues and diffuse from them into the general circulation. Whether local formation or local concentration of antibody is the true explanation, the important fact remains that the ratio of tissue antibodies to serum antibodies is higher in tissues stimulated by regional vaccination than by either active or passive general immunization. Regional vaccination would seem therefore the preferable method for elevating the level of resistance of tissues at the port of entry to the body.

### Journal of Nutrition, Philadelphia

16: 1-102 (July) 1938

- Stability of Carotene in Plant Tissues. M. W. Taylor and W. C. Russell, New Brunswick, N. J.—p. 1.
- Digestibility and Nutritional Value of Cereal Proteins in the Human Subject. J. R. Murlin and H. A. Mattill, Rochester, N. Y.—p. 15.
- Egg-Replacement Value of Several Proteins in Human Nutrition. Emma E. Sumner, H. B. Pierce and J. R. Murlin, Rochester, N. Y.—p. 37.
- Concerning Toxicity of Vitamin A. E. B. Vedder and C. Rosenberg, Washington, D. C.—p. 57.
- Environmental Temperature and "Rat Acrodynia." P. György, Cleveland.—p. 69.
- Availability of Calcium in Spinach, in Skim Milk Powder and in Calcium Oxalate. B. W. Fairbanks and H. H. Mitchell, Urbana, Ill.—p. 79.
- Radiographic Demonstration of Protection by Vitamin D Against Metaphysical Decalcification in Adult Rats on High Calcium-Low Phosphorus Diet. B. O'Brien and K. Morgareidge, Rochester, N. Y.—p. 91.

### Kansas Medical Society Journal, Topeka

39: 281-324 (July) 1938

- Hemiplegia: Some of Its Pathologic and Clinical Features. L. J. Karnosh, Cleveland.—p. 281.
- Postpartum Care of Cervix, with Special Reference to Carcinoma Prophylaxis. R. A. West, Wichita.—p. 285.
- \*Tularemia: Report of Three Cases. H. B. Melchert, Council Grove.—p. 288.
- Diagnosis and Management of Hyperthyroidism. P. E. Craig, Coffeyville.—p. 292.

**Tularemia.**—Melchert reports three cases of tularemia, evidently contracted from fish that were caught in a fish trap in which a rabbit was placed as bait. All three patients were given two intravenous injections of 15 cc. each of antitularemic serum on successive days without any reaction. Two of the three patients definitely improved, one in twenty-four hours, the other in forty-eight hours after administration. The third patient seemed to be benefited only slightly. The improvement in the two instances seemed to be too prompt to have been a coincidence. The only conclusion that can be drawn is that the administration of antitularemic serum should be worth trying in other cases.

### Laryngoscope, St. Louis

48: 443-526 (July) 1938

- \*Thyroxine Therapy in Otosclerosis: Report of Forty-Two Cases. M. A. Goldstein, St. Louis.—p. 443.
- What Is Justifiable to Do in Otitic Meningitis? (a) Brief (Historical) Review of Operative Treatment of Purulent Meningitis. T. J. Harris, New York.—p. 458.
- 1d: (b) Surgical Indications in Suppurative Meningitis. J. G. Dwyer, New York.—p. 461.
- 1d: (c) Surgical Treatment of Meningitis. I. Friesner and H. Rosenwasser, New York.—p. 472.
- 1d: (d) Sulfanilamide and Related Compounds in Treatment of Meningitis Secondary to Ear and Sinus Infections. E. Appelbaum, New York.—p. 482.
- Surgical Technic for Conservation of Hearing in Chronic Mastoiditis. J. M. Smith, New York.—p. 499.

**Thyroxine in Otosclerosis.**—Goldstein has used one sixty-fourth grain (0.001 Gm.) of thyroxine in forty-two instances of otosclerosis in young persons, following the technic of Gray. The tablet of thyroxine placed on a watch glass is dissolved in four drops of warm sterile distilled water and is injected through the drum membrane directly into the cavity of the middle ear so that it may be in contact with the promontory and oval window. The patient's head is inclined to a completely lateral position for the ear to be anesthetized with from 15 to 20 drops of aniline oil-cocaine solution. The solution is dropped to the fundus of the canal and is allowed to remain there for five minutes, when it is carefully swabbed out. The insertion of the

hypodermic needle for injecting the thyroxine is at the point half way between the tip of the malleus handle and the posterior rim of the annulus tympanicus. Immediately after the injection, with the patient in an erect position and with his head thrown well backward, the patient is directed to keep the mouth open wide for three minutes, thus preventing part of the injected fluid from escaping down the eustachian tube. Following the injection, the patient is instructed to remain quiet for from twenty to thirty minutes and is further cautioned not to be too active for the rest of the day. The thyroxine treatment consists of four consecutive injections made alternately in the right and the left ear at intervals of one week. The selection of patients who may be best qualified to receive such treatment is based largely on one's ability to make a diagnosis of clinical otosclerosis. Patients more than 30 years of age usually are less satisfactory subjects for the treatment, either because of their age or because of the long duration and progressive character of their defective hearing. Of the forty-two patients subjected to thyroxine treatment, twenty-three have shown definite improvement in hearing capacity and in some cases cessation or reduction of tinnitus and a general clarification in the perception of speech, and ten show slight improvement by comparison of audiograms before and after injection; but this was not stabilized in the final audiograms six months or more later. In nine no improvement was noted following treatment. In no case was there any decrease in hearing following these injections.

### Medical Annals of District of Columbia, Washington

7: 207-240 (July) 1938

- The Cut Tendon. P. A. Caulfield, Washington.—p. 207.  
 Interpretation of Certain Cardiac Signs in Children. J. A. Lyon, Washington.—p. 211.  
 Artificial Insemination. W. R. Stokes, Washington.—p. 218.  
 Treatment of Rheumatoid Arthritis. W. K. Myers, Washington.—p. 220.  
 Signs and Symptoms of Intracranial Trauma. H. H. Schoenfeld, Washington.—p. 223.

### New England Journal of Medicine, Boston

219: 75-108 (July 21) 1938

- The Work and Aims of the United States Public Health Service. T. Parran, Washington, D. C.—p. 75.  
 \*Tolerance to and Toxicity of Insulin: I. With Spontaneous Eating. F. M. Allen, with assistance of J. H. Rice, New York.—p. 77.  
 Traumatic Rupture of the Diaphragm in a Child: Report of Case. P. H. Duff, Peabody, Mass.—p. 84.  
 Hereditary Arthrodysplasia Associated with Dystrophy of Nails: Report of Case. J. W. Sever, Boston.—p. 87.  
 Treatment of Pulmonary Tuberculosis: Comparison of Home and Sanatorium Methods. R. Volk, Boston.—p. 89.  
 The Cost of Institutional Care of Epileptics in Massachusetts. D. V. Brown and M. Moore, Boston.—p. 92.

**Tolerance to and Toxicity of Insulin.**—In an attempt to determine the tolerance to and toxicity of insulin after cautious trials with ascending doses of insulin in several patients in the Psychiatric Institute, Allen gave a strong, young diabetic patient subcutaneous injections of 750 and 1,000 units of insulin. His insulin requirement was 75 units daily. These trials, together with animal experiments, disposed of fears that such doses would demand a proportionately huge supply of carbohydrate. Instead of the 100 Gm. of starch and sugar it was learned that any small amount, such as 10 Gm., would act temporarily as an antidote for 750 or 1,000 units of insulin but that these feedings had to be repeated, because the patient was unable at any one time to eat enough to give protection through the entire duration of the effects of such a dose. Protection was afforded by a series of intravenous injections of dextrose of only 10 Gm. each. The blood sugar curves indicate that the effects of the insulin lasted for about twenty-four hours. This duration was not appreciably changed by alterations in the amount of carbohydrate used as an antidote or by the high or low level of blood sugar during this time. The patient experienced hunger and faintness only when there was marked hypoglycemia. Otherwise he felt well. In particular, the absence of disturbance of appetite or digestion at all times appears significant as indicating that these doses were well within the bounds of safety and that they did not establish the maximal limit of insulin tolerance in this individual. The foregoing doses failed to produce symptoms of intoxication, indicating that the tolerance of many persons must be higher than this. On the other hand, doses of only a few units can

produce the typical condition in predisposed persons. The insulin dosage which can be tolerated without intoxication in the foregoing sense has been determined more or less accurately for several animal species. For a strong man it is probably above 15 units per kilogram of weight. For the dog and cat it appears to be less than this. For the rabbit it is from 35 to 40 units per kilogram, for the mouse 1,000 units, and for the rat from 2,000 to 4,000 units. For birds it is still higher. This series may offer some support for Sakel's hypothesis, in showing lower insulin tolerance of the species having greater development of the higher nervous centers. The fact that patients sensitive to insulin are usually nervous while those with higher resistance are more phlegmatic may, if generally confirmed, be significant from the psychiatric as well as the general physiologic point of view. No animal ever succumbs to insulin hypoglycemia while eating up to the capacity of a normal hungry individual of the species—loss of appetite always precedes any dangerous symptoms. The high tolerance of strong or average persons confirms the prevailing view of the nontoxicity of insulin for them up to an extremely high limit, but it does not imply that similar doses can be given safely to weak or sensitive individuals.

### New York State Journal of Medicine, New York

38: 969-1014 (July 1) 1938

- Suprarenal Backache. G. D. Hoffeld, Troy.—p. 969.  
 Fox-Fordyce Disease in a Male. S. M. Kaufman, New York.—p. 971.  
 Malaria in Drug Addicts. L. J. Boyd and M. Schlackman, New York.—p. 974.  
 The Saddle Nose. A. A. Cinelli and J. A. Cinelli, New York.—p. 977.  
 Acute Sinus Infections. F. W. White, New York.—p. 982.

38: 1015-1058 (July 15) 1938

- Effects of Insulin, Metrazol and Camphor Convulsions on Brain Metabolism. S. B. Wortis, New York.—p. 1015.  
 \*Gas Gangrene: Morbidity and Mortality in New York State (Exclusive of New York City)—Based on General Hospital Reports for the Years 1932-1936 Inclusive. O. W. H. Mitchell, T. L. Bryant and O. D. Chapman, Syracuse.—p. 1022.  
 Otitic Meningitis Due to Streptococcus Haemolyticus: Operation and Recovery. M. H. Kaiden, New York.—p. 1026.

**Gas Gangrene.**—Mitchell and his associates sent a questionnaire to the superintendents of all general hospitals of fifty or more beds in New York state requesting the following information: number of gas gangrene infections in the hospital during 1932 to 1936 inclusive, description of injuries or conditions and their care preceding the infection, time elapsing between injury and recognition of infection, bacteriologic confirmation, x-ray diagnosis, surgical care and general treatment, specific treatment results obtained, statement regarding need and value of serum, and suggestions and comments. The total indisputable gas gangrene infections for the five years number 135. Seventy-three additional cases were reported in which the diagnosis was doubtful or the data were incomplete. Predisposing factors have been arranged in the 135 cases. Nine diabetic patients had gas gangrene following amputation and died. Four arteriosclerotic patients had gas gangrene following amputation and three died. Six diabetic patients had gas gangrene before surgical treatment and three died. Seven deaths were listed under pregnancy. Nine patients received prophylactic injections of antitoxin and two died. These two fatalities probably resulted from damage other than gas gangrene infection. Eighty-four patients received therapeutic injections of serum and twenty-nine died. If the data submitted regarding gas gangrene are accepted, they indicate that infection by this group of spore-bearing bacteria are probably as frequent as tetanus. It is hoped that the statistics offered, incomplete as they are, will be of value in determining whether gas gangrene antitoxin should be prepared and supplied by the state department of health.

### Oklahoma State Medical Assn. Journal, McAlester

31: 227-260 (July) 1938

- Management of Hypertonic Period of Early Infancy. F. C. Neff, Kansas City, Mo.—p. 227.  
 Analgesia and Anesthesia in Labor. G. Allen, Oklahoma City.—p. 233.  
 Stillbirths. P. N. Charbonnet and E. O. Johnson, Tulsa.—p. 236.  
 Birth Control. G. Osborn, Tulsa.—p. 241.  
 Prenatal Care or the Management of Pregnancy. G. L. Kaiser, Muskogee.—p. 242.  
 Treatment of Poison Ivy. H. A. Foerster, Oklahoma City.—p. 245.



## Physiological Reviews, Baltimore

18: 329-480 (July) 1938

- Physiologic and Pathologic Aspects of Silica. E. J. King and T. H. Belt, London, England.—p. 329.  
Role of Inflammation in Immunity. V. Menkin, Boston.—p. 366.  
Hormones and the Placenta. W. H. Newton, New Haven, Conn.—p. 419.  
Pharmacology of Anesthetic Gases. M. H. Seevers and R. M. Waters, Madison, Wis.—p. 447.

## Psychiatric Quarterly, Utica, N. Y.

12: 405-612 (July) 1938

- \*Improvement and Recovery Rates in Dementia Praecox Without Insulin Therapy. D. Whitehead, Utica, N. Y.—p. 409.  
"Spontaneous" Remissions in Dementia Praecox. R. C. Hunt, H. Feldman and R. P. Fiero, Rochester, N. Y.—p. 414.  
Some Comparisons Between Insulin Treated and Non-Insulin Treated Cases of Schizophrenia. R. A. Savitt, Queens Village, N. Y.—p. 426.  
Statistical Comparisons Between Preinsulin and Insulin Eras: Recoveries and Improvements. J. Notkin and F. J. DeNatale, Poughkeepsie, N. Y.—p. 432.  
Insulin Therapy and Its Complications in Treatment of Psychoses. O. J. McKendree, Utica, N. Y.—p. 444.  
Serious Complications of Insulin Shock Therapy. F. J. O'Neill, Central Islip, N. Y.—p. 455.  
Protracted Comas Occurring During Insulin Hypoglycemic Therapy. W. A. Horwitz, J. R. Blalock and M. M. Harris, New York.—p. 466.  
Prolonged Coma in Insulin Treatment of Dementia Praecox. R. F. Binzley, Brentwood, N. Y., and J. L. Anderson, Miami, Fla.—p. 477.  
Further Metabolic Studies Regarding Effect of Insulin Hypoglycemic Therapy in Mental Patients: Metabolic Changes Accompanying the Glucose Tolerance Test Before and After the Course of Treatment. M. M. Harris, J. R. Blalock and W. A. Horwitz, New York.—p. 489.  
Studies in Parotid Secretion of Patients Before, During and After Insulin Hypoglycemic Therapy. E. I. Strongin, L. E. Hinsie and M. M. Harris, New York.—p. 506.  
Mechanism Underlying Low Rectal Temperature in Hypoglycemia: Role of Adrenalin. H. S. Barahal, Kings Park, N. Y.—p. 514.  
Outcome of Insulin Treatment of 1,000 Patients with Dementia Praecox. B. Malzberg, Albany, N. Y.—p. 528.  
Status of Paroled Patients Treated with Hypoglycemic Shock. D. M. Carmichael, Brentwood, N. Y.—p. 554.  
Prognosis in Dementia Praecox. J. A. Taylor and C. F. Von Salzen, Kings Park, N. Y.—p. 576.  
Interpersonal Content in Schizophrenic Thought. H. K. Johnson, Orangeburg, N. Y.—p. 583.

**Dementia Praecox Without Insulin Therapy.**—Whitehead discusses the outcome by 1936 of 105 consecutive admissions, during the fiscal year 1931-1932, of dementia praecox. This allows a minimal observation period of five and one-half years. None of the patients were treated with insulin. The diagnosis was changed in three cases; 6 per cent of the patients died, 42 per cent have been returned to the community and 52 per cent are in hospitals. In the sixty-four cases diagnosed hebephrenic the improvement rate was found to be 51.5 per cent with 1.5 per cent recovery, 21.8 per cent much improvement and 28.2 per cent improvement. In the thirty-one paranoid cases the total improvement rate was 48.2 per cent with no recoveries. The cases of simple and catatonic type were too few to permit satisfactory conclusions. Exacerbation of symptoms necessitating readmission to the hospital among those discharged was found to occur in nine, or 21 per cent, of the forty-two discharged patients. Five of these were from the much improved and four from the improved groups. Of these nine who were readmitted only two remain in the hospital, the other seven having been discharged again. These results were more favorable than those of a similar series of cases surveyed after one year of observation and insulin treatment. In the latter 69 per cent were found to be unimproved, compared with 49 per cent in the five year survey. Comparison with results achieved by routine institutional measures plus insulin therapy shows a marked increase in the recovery rate and a marked diminution in the percentage of unimproved patients in the series treated with insulin. The percentage of improved and much improved patients is virtually the same with or without insulin.

## Public Health Reports, Washington, D. C.

53: 1119-1180 (July 8) 1938

- \*Mortality During Periods of Excessive Temperature. Mary Gover.—p. 1122.  
Polymyositis: Prevalence Since 1915 and the Present Situation. B. C. Hampton.—p. 1143.

**Mortality During Excessive Temperature.**—Gover discusses the weekly mortality rates from all causes for eighty-six large cities during the months of May, June, July, August and the first part of September of 1925 and 1930 to 1937 and

gives figures, curves and tables. In five of these nine years there are clearly defined peaks which occurred in the weeks ended June 13, 1925, July 4, 1931, July 28, 1934, July 18, 1936, and July 17, 1937. Slight increases in mortality occurred during July in 1930 and 1932 and during the first week of August 1933. During the summer of 1935, however, and the summers of 1926 to 1929, weekly rates of mortality from all causes did not show any marked deviations from normal. The week of maximal mortality occurred in July in six years and during the first part of June and the first part of August, respectively, in two other years. A comparison of maximal summer rates with a summer normal and with a normal for January, in all cities combined, is 12.5 actual rate and 10.2 normal rate per thousand of population (annual basis) for week ended July 4, 1931, and respectively 12.3 and 10 for July 28, 1934, 17 and 10.1 for July 18, 1936, and 12.3 and 10 for July 17, 1937. The actual normal rate for January is 12.6, based on the four weeks ended Jan. 27, 1934. During three of the four years the maximal summer rate was about equivalent to a normal January rate and exceeded it in 1936 by 4.4 per thousand of population. The foregoing weekly rates are weighted averages of the rates in the total number of cities, and thus the size of the death rate in the peak week is influenced by the area which was most severely affected. The area of high mortality was largely confined to the eastern coast cities in 1925 and 1937 and to the North Central section in 1931 and 1934. Although the rates for the affected individual cities in 1934 were greater than similar rates in 1937, the rise in the curve for all cities combined is about as great in 1937 as in 1934, owing to the concentration of the population in the East, which was the area of high mortality in 1937. Mortality which is certified and recorded as due to "excessive heat" includes by no means all excess deaths which occur during periods of extreme temperature. During July of 1934 in Kansas, "excessive heat" accounts for only about one fourth of the excess of deaths which occurred during that month. The remainder of the excess was distributed largely among diseases of the heart, cerebral hemorrhage, nephritis and pneumonia. Daily maximal temperatures for groups of cities and for individual cities in affected areas show that the excess in mortality is preceded by at least several successive days of extreme temperature. Excess mortality during a second period of extreme temperature in any one year is slight when compared with the excess mortality during the first major heat wave of the summer, even when the second rise in temperature is extreme.

## Radiology, Syracuse, N. Y.

31: 1-130 (July) 1938

- Thoracic Serioscopy: Method of Study for Pleuropulmonary Lesions. P. Cottenot, Paris, France.—p. 1.  
X-Ray Diagnosis of Complete and Partial Acute Intestinal Obstruction. L. Solis-Cohen and S. Levine, Philadelphia.—p. 8.  
Radiology in Amebiasis Diagnosis. G. Esguerra-Gómez, Bogotá, Colombia, South America.—p. 15.  
\*Roentgen and Light Therapy of Intestinal and Peritoneal Tuberculosis. E. Mayer and M. Dworkin, New York.—p. 35.  
Local and General Irradiation in Hodgkin's Disease. L. F. Craver, New York.—p. 42.  
Observations on Radiologic Chest Volume During Artificial Pneumoperitoneum Treatment. A. L. Banyai, Milwaukee.—p. 48.  
Some Biologic Experiments with Condenser Discharge Type of X-Ray Tube. K. H. Kingdon, P. A. Zahl, C. P. Haskins and H. E. Tanis Jr., Schenectady, N. Y.—p. 52.  
Bone (Calcium) Metabolism in Relation to Industrial Injury. W. W. Watkins, Phoenix, Ariz.—p. 59.  
Treatment of Female Endocrinopathies. J. Kotz and Elizabeth Parker, Washington, D. C.—p. 66.  
Studies on Effect of Radiation on Growth and Respiration of Various Tissues in Vitro: Lethal Dose and Sublethal Dose of X-Rays and Radium: Preliminary Report. Anna Goldfeder, New York.—p. 73.  
Effect of Radiation on Cell Respiration: I. Respiration and Anaerobic Glycolysis of Mouse Kidney in Vitro Following Radiation. Anna Goldfeder and J. L. Fershing, New York.—p. 81.  
Generators for Gamma Rays and Neutrons and Radiotherapeutic Possibilities. A. Bouwers, Eindhoven, Holland.—p. 89.  
Experimental Study of Effects of Roentgen Rays on Gonads of the Developing Chick. J. M. Eisenberg and A. Zikmund, Chicago.—p. 94.  
How X-Rays May Kill Cells. H. Rudisill Jr. and J. H. Hoch, Charleston, S. C.—p. 104.

**Intestinal and Peritoneal Tuberculosis.**—Mayer and Dworkin discuss the effect that roentgen and ultraviolet irradiation have on intestinal and peritoneal tuberculosis, their effect on animal and human tissue, the indications and technic of

usage in accordance with the pathologic changes, the clinical applications and comparative clinical results. The use of roentgen and ultraviolet radiation for treatment of intestinal and peritoneal tuberculosis is often productive of good results, warranting more general use of these measures as adjuvants to rest and hygienic treatment. A trial of tumor dosage of x-rays under careful supervision is indicated in proliferative forms of intestinal and peritoneal tuberculosis that have not responded to smaller doses. With roentgen treatment, best results are obtained in hyperplastic and simple proliferative forms of intestinal and peritoneal tuberculosis, especially when applied early in ascitic forms of peritoneal tuberculosis. With ultraviolet therapy, both natural and artificial, the ascitic and proliferative forms of peritoneal tuberculosis as well as the proliferative and ulcerative forms of intestinal tuberculosis are generally responsive in patients not too critically ill.

### Review of Gastroenterology, New York

5: 114-225 (June) 1938

- Intestinal Manifestations of Systemic Disease. J. Felsen, New York.—p. 114.  
Regional Enteritis. R. Upham, New York.—p. 133.  
Bacteriology of Intestinal Tract in Certain Chronic Diseases: I. Sporulating Anaerobes, Aciduric Organisms and Colon Group. C. W. Lieb, G. H. Chapman, W. B. Rawls and M. H. Stiles, New York.—p. 142.  
Medical Treatment of Enteric Granulomas (Ileitis) and Colitis. A. Bassler, New York.—p. 150.  
Experimental and Clinical Strongyloidiasis. E. C. Faust, New Orleans.—p. 154.  
X-Ray and Radium Therapy: Indications and Contraindications. I. I. Kaplan, New York.—p. 158.  
Change of Intestinal Flora. B. Sokoloff, New York.—p. 165.  
Clinical Classification of Intestinal Obstruction. E. Rosenthal, Budapest, Hungary.—p. 167.  
Causes of Peptic Ulcer Recurrences and Their Prevention. I. R. Jankelson, Boston.—p. 170.  
Seventy Proved Bleeding Duodenal Ulcers. W. R. Morrison, Boston.—p. 175.  
Review of Acid Factor in Peptic Ulcer: Preliminary Report. I. W. Friedberg, New York.—p. 181.  
Bacteriologic Problems Connected with Gastroenterology. G. F. Fasting, New Orleans.—p. 187.

### Rhode Island Medical Journal, Providence

21: 99-112 (July) 1938

- Factors in Maternal Mortality in Rhode Island: Conclusions Drawn from a Five Year Study. E. S. Brackett and M. Goldberger, Providence.—p. 99.  
\*Painful Shoulder in Association with Coronary Artery Disease. C. B. Leech, Providence.—p. 104.

**Painful Shoulder and Coronary Disease.**—Four patients with painful shoulders associated with disease of the coronary artery led Leech to a consideration of the possible causal relationship of the two conditions. Several articles concerned with this association have been found in the literature. The general opinion seemed to be that the association is too frequent to be accidental. The majority of the patients had pain in the left shoulder and anginal pain referred to the left arm. Three of the author's patients had pain in the shoulder to which the anginal radiation was referred, in two of them the right shoulder; in the fourth the anginal pain was substernal only. Painful shoulders are uncommon in forms of cardiac disease other than that due to sclerosis or occlusion of the coronary arteries. It is not difficult to distinguish pain of the shoulder from that of angina pectoris. The anginal pain is usually relieved by glyceryl trinitrate, while pain of the shoulder continues even though it may have been intensified during the anginal attack. Pain of the shoulder is not aggravated by exercise such as walking but there is marked limitation of movement of the arm; neither the shoulder nor the arm tolerates weight bearing. In the author's four patients the difficulty of the shoulder disappeared as general improvement in the cardiac condition came about; apparently as the coronary blood supply improved, the disability of the shoulder improved also. Diathermy and salicylates gave but little relief. That the site and radiation of anginal pain may be affected by extracardiac lesions is well recognized and there may be a somewhat similar reciprocal relation between pain of the shoulder and disease of the coronary artery; if so, the underlying condition in the girdle of the shoulder remains difficult to detect. If the pain of the shoulder is due to some sort of reflex stimulation, it seems

logical to consider it as much a part of the cardiac picture as the angina pectoris itself and it is logical to judge by its disappearance that some improvement in the myocardial blood supply has occurred. In the absence of other definite causes for such disabilities of the shoulder and arm, disease of the coronary artery should be suspected and searched for by the usual methods.

### Rocky Mountain Medical Journal, Denver

35: 577-664 (Aug.) 1938

- Syphilis and the Medical Practitioner. T. Parran, Washington, D. C.—p. 595.  
Fractures of Radius and Ulna at the Wrist. R. D. Schrock, Omaha.—p. 599.  
Hemorrhagic Purpura and Its Relief by Splenectomy. J. W. Ames, Denver.—p. 601.  
Combined Operative and Injection Method of Treatment in Inguinal Hernia. C. L. Wilmoth, Denver.—p. 609.  
\*Quantitative Serologic Test for Syphilis. W. W. Williams, Denver.—p. 612.

**Quantitative Serologic Test for Syphilis.**—Williams has devised a quantitative test for syphilis based on Kolmer's modification of the Wassermann reaction and the principle involved is the use of graduated amounts of the serum to be tested. The amounts of serum used are 0.2, 0.1, 0.05 and 0.001 cc. The test is reported as 4 plus if all four amounts are positive, 3 plus if three are positive, 2 plus if two are positive, and 1 plus if only one is positive. If with the largest amount of serum (0.2 cc.) there is some degree of hemolysis, the result is reported as doubtful. This quantitative estimation of the amount of antibodies present in the serum is of practical value, he believes, in determining the result of therapy in cases in which treatment is being administered.

### Southwestern Medicine, El Paso, Texas

22: 253-300 (July) 1938

- Bone Traction for Correction of Scoliosis: Preliminary Report. F. Goodwin, El Paso, Texas, and J. W. Althaus, Hot Springs, N. M.—p. 253.  
Tumors of the Uterus. G. W. Jones, Philadelphia.—p. 255.  
Regional Enteritis. J. H. Woolsey, Woodland, Calif.—p. 258.  
Anal Infections. H. Safford, El Paso, Texas.—p. 262.  
The Hypertonic Infant. J. Hild, Douglas, Ariz.—p. 266.  
Management of Hay Fever and Asthma in General Practice. L. O. Dutton, El Paso, Texas.—p. 270.  
Adequate Treatment of Syphilis: II. E. C. Fox, Dallas, Texas.—p. 272.  
Syphilis and Pregnancy. A. J. De Pinto, Phoenix, Ariz.—p. 274.

### Tennessee State Medical Assn. Journal, Nashville

31: 251-292 (July) 1938

- Recent Experience with Transurethral Prostatectomy. G. J. Thompson, Rochester, Minn.—p. 251.  
The Bedside Diagnosis of Cardiac Irregularities. C. R. Thomas, Chattanooga.—p. 255.  
Principles in Treatment of Fractures of Small Bones of the Hand. W. J. Sheridan, Chattanooga.—p. 263.  
Noneconvulsive Toxemia of Pregnancy. F. E. Whitacre, Memphis.—p. 272.  
Pilonidal Sinus. E. T. West, Johnson City.—p. 275.

### Virginia Medical Monthly, Richmond

65: 449-514 (Aug.) 1938

- Limitations of Phrenic Surgery in Pulmonary Collapse Therapy. F. S. Johns, Richmond.—p. 449.  
Skin Manifestations in Tularemia. J. M. Hitch, Raleigh, N. C., and D. C. Smith, Charlottesville.—p. 452.  
Nutritional Deficiencies and Their Relation to Clinical Course of Heart Disease. W. B. Porter, Richmond.—p. 459.  
Program for Adequate Prevention and Better Treatment of Mental Illness. J. R. Blalock, Marion.—p. 467.  
The Care of Infants with Allergic Eczema. W. A. McGee, Richmond.—p. 472.  
Determination of Urinary Excretion of Vitamin C (Ascorbic Acid). T. D. Walker Jr., Newport News.—p. 475.  
Colic (Gastro-Enterospasm). W. E. Ketter, Kinston, N. C.—p. 479.  
Management of Acute Perforated Peptic Ulcer. B. W. Rawles Jr., Richmond.—p. 484.  
The Heart in Myxedema. J. L. Guerrant and J. E. Wood Jr., University.—p. 488.  
Present Day Practice of Painless Obstetrics. J. M. Whitfield, Richmond.—p. 492.  
Toxic Goiter and Its Effect on Industry. N. W. Gillette, Toledo, Ohio.—p. 494.  
The Practitioner's Attitude Toward State Medicine. F. M. Horsley, Arrington.—p. 498.  
A Doctor Looks at Nursing. E. P. Lehman, Charlottesville.—p. 499.

## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## Archives of Disease in Childhood, London

13: 89-192 (June) 1938

- Intracranial Hemorrhage in the Newborn: Study of Diagnosis and Differential Diagnosis Based on Pathologic and Clinical Findings in 126 Cases. W. S. Craig.—p. 89.
- Vitamin C Excretion in Children, with Particular Reference to Rheumatic Fever. J. D. Keith and Evelyn M. Hickmans.—p. 125.
- \*Otitis Media and Mastoiditis in Infancy. Grace McConkey and E. C. R. Couper.—p. 137.
- Radiology in Diagnosis of Hypertrophic Pyloric Stenosis. L. Findlay.—p. 145.
- Blood Phosphorus in Egyptian Infants. I. A. Sabri and M. A. Abboud.—p. 157.
- Osteopetrosis. A. M. Nussey.—p. 161.
- Cooley Syndrome in an English Child. E. G. L. Bywaters.—p. 173.

**Otitis Media and Mastoiditis in Infancy.**—Of the 1,324 infants less than 1 year old admitted to the Alder Hey Children's Hospital during 1936, McConkey and Couper found that 195 (14 per cent) suffered at one time or another from otitis media or otitis media and mastoiditis. In a certain proportion the otic infection was undoubtedly secondary to some other pathologic process. The remainder were cases in which the infection appeared to be responsible for the child's illness and in which, in the majority, suitable treatment of the ear resulted in improvement. The latter is called primary. Any doubtful case was included in the secondary group. In the secondary group (seventy-four cases) associated with respiratory infections the greatest number of cases and the highest death rate (31 per cent) occurs in the age group from 3 to 9 months, while in the group (twenty-one) associated with nutritional disturbance the greatest number occurs in the age group from birth to 6 months, with a death rate in this group of 45 per cent. In the group associated with nasopharyngitis (twelve cases) the greatest mortality (33 per cent) was in the age group from birth to 6 months. In the nine cases of otitis media complicated by another infection there were four fatalities. The previous method of feeding these children does not appear to influence the results. There were no deaths in the seven cases of primary classic mastoiditis. In the thirty-three primary cases of otitis media and mastoiditis the death rate was 84.8 per cent and the highest death rate appears to be in the age group from 1 to 3 months. All of the thirty-nine children with mild primary otitis media and mastoiditis recovered. Among the patients with classic mastoiditis only one was breast fed for more than three months, while the remainder all had shorter periods of breast feeding. In the toxic group the highest death rate occurred among the infants with no or less than one month of breast feeding. Operation is always indicated in classic mastoiditis and the results are good, in the toxic group the results are poor and in the mild group the results are good in selected cases. Once the infant's infection so overwhelms it as to produce symptoms of toxicity, its chances of survival are just as great with conservative treatment as with surgical intervention. The analysis of the seasonal incidence of the primary group shows that the greatest numbers occur during the months of July, August, September and October, the season of the year when diarrhea and vomiting are most prevalent in infancy. Confirmation is afforded for the theory already advanced by numerous authors that the well known diarrhea and vomiting syndrome is frequently caused by the presence of otitis media and latent mastoiditis, the pathology of which is of the nature of a retention phenomenon with lack of satisfactory drainage.

## British Medical Journal, London

2: 53-106 (July 9) 1938

- Survey of Prostatic Enlargement and Its Treatment. K. Walker.—p. 53.
- Anemia and the Gastrointestinal Tract. Janet M. Vaughan.—p. 57.
- \*Further Observations on Benzedrine. E. W. Anderson.—p. 60.
- \*Use of Placental Extract in Epidemic of Measles. T. N. Parish.—p. 68.
- A Woman Blind from Birth Who Acquired Sight at 22 Years of Age. R. Colley.—p. 67.
- Molds and Asthma. E. M. Fraenkel.—p. 68.

**Benzedrine in Mental Disease.**—Anderson gave benzedrine orally to thirty-three patients with minor forms of mental disorders in daily doses ranging from 5 to 45 mg. and to eight normal subjects. In fifteen it was found necessary to discon-

tinue the drug because of untoward effects. In two others the drug appeared to be of no value and was discontinued. In eleven a beneficial effect could be claimed, in some cases with reservations. In five no mental, physical and psychic effect was produced. Of the eleven patients who appeared to benefit from the drug only three had no physical symptoms—that is, the drug appeared to exert its effect in the psychic sphere alone. The principal symptoms were headaches, giddiness and cardiovascular symptoms. Of the normal subjects one had decreased frequency of micturition, another increased frequency, two had pain in the chest, one had palpitation, one had some anorexia, one felt giddy and tired and in one there were no physical symptoms. As for the effect of the drug on different psychiatric conditions, the best results were obtained with the depressed patients. The drug is perhaps of greatest value in the terminal stages of a depression—that is, when clinical improvement has already appeared. With regard to sleep, the results were variable. Of the normal subjects all but two experienced an increase in mental or physical activity. It is difficult to claim any great therapeutic value from benzedrine, but its use relieves the depressed patient even transiently and gives him a few hours' respite. It should be used cautiously.

**Placental Extract in Measles.**—Of 205 girls in a girls' school under the care of Parish, eighty-nine had not had measles. January 18 one child was found to be in the incubation stage of measles. Contacts were widely spread throughout the school. Prophylactic measures were discussed and placental extract was used in an attempt to modify the subsequent attacks and to lower the complication rate. By the end of the term (April 3) seventy-five of the eighty-nine susceptible girls had measles, as well as five of the 116 said to have had measles previously, two of whom had also received a prophylactic injection. The extract had no effect in preventing the attack of measles. Figures show that among the susceptible cases measles developed in 93 per cent of those who had been given the modifying injection and in 75 per cent of those who had not. The epidemic was of moderate severity, although there was a remarkable freedom from serious complications. The only complication of any severity was one case of suppurative otitis media.

## Indian Medical Gazette, Calcutta

73: 321-384 (June) 1938

- Treatment of Schizophrenia by Inducing Epileptiform Shocks by Drug Cardiazol: Experimental Study of Forty-Two Cases. J. E. Dhunibhoy.—p. 321.
- Treatment of Ascariasis. P. A. Maplestone and A. K. Mukerji.—p. 326.
- \*Clinical Investigation on Value of Proseptasine as Prophylactic in Puerperal Infection. S. N. Hayes and A. Sami.—p. 328.
- Necessity of Teaching Frequency of Rheumatic Infection in Young Indians. H. Stoll.—p. 330.
- \*Postarsphenamine Blood Dyscrasias. R. V. Rajam and R. B. Tampi.—p. 337.
- Simple Method of Obtaining Hyperextension for Application of Plaster of Paris Jacket in Cases of Fracture of Thoracic and Lumbar Vertebrae. F. R. W. K. Allen and I. Basu.—p. 341.
- Premedication in Sodium Evipan Anesthesia: Study of 535 Cases. E. S. Chellappa.—p. 342.
- Control of Stegomyia Fasciata (Aedes Aegypti) Mosquitoes in Indian Country Craft by Mosquito-Proof Metal Cap (Bennett Pattern) for Drinking-Water Receptacles. F. D. Bana.—p. 344.
- Bertiella Studeri, a Natural Tapeworm Parasite of Monkeys, in a Hindu Child. S. C. Roy.—p. 346.
- Hydrogen Ion Concentration of Cholera Stools. C. L. Pasricha, D. N. Chatterjee and K. S. Malik.—p. 346.

**Sulfanilamide Compound as Prophylactic in Puerperal Infection.**—During 1937 Hayes and Sami administered *p*-benzyl-aminobenzene sulfonamide (proseptasine) prophylactically in all emergency cases of puerperal infection admitted to the hospital. From January to June 1937 they gave two tablets three times daily (3 Gm.) for four days. From July to December 1937 they gave four tablets three times daily (6 Gm.) for four days. There was a reduction of morbidity due to genital sepsis from 22.16 per cent (1935) and 16.94 per cent (1936) to 11.45 per cent in 1937, during which time the drug was given prophylactically. This reduction occurred chiefly in the abnormal cases: the membranes were ruptured and infection was potential or apparent, the patient had been in labor from a few hours to a few days, obstetric shock was usually present, multiple vaginal examinations or attempts at delivery had been practiced or the case was usually terminated by means of an obstetric operation. No ill effects have been observed as a result of the

administration of the drug; as much as 125 Gm. has been administered without signs of toxic symptoms. The authors suggest that larger doses of the drug be used. Although a reduction of 5 per cent in morbidity is not striking, they feel that it is encouraging enough to advocate further investigation with increased dosage.

**Postarsphenamine Blood Dyscrasias.**—Rajam and Tampi encountered three cases of postarsphenamine blood dyscrasia in treating 18,620 cases of syphilis (64,101 injections of arsenicals). Recovery in case 1 confirms the observation of other workers that usually thrombocytopenic cases run a benign course and respond well to ordinary therapeutic measures. The platelet count in this case was much lower than that enumerated in any other case so far. Though the patient was on his way to recovery it cannot be stated that complete regeneration of the platelets had occurred. When he was discharged the count was only 50,000 per cubic millimeter. The symptoms in this case started two days after the last injection. Case 2 represents a typical secondary aplastic anemia with all the blood elements employed. The severe type of aplastic anemia caused in this case may have been the result of fuadin or *p*-oxyacetylaminophenylarsinate of diethylamine (acetylarsan) or a combination of the two. Neoarsphenamine was employed in case 3. Agranulocytosis was the most prominent feature. Examination of the bone marrow showed the aplastic condition of the hematopoietic system. Possibly if the patient had lived longer a better clinical picture of aplastic anemia might have developed. In cases 2 and 3 there were no lesions in the throat which are usually associated with low neutrophil counts. The futile attempts at treatment are shown by the two fatal cases. Undue bleeding from the gums during the arsenical treatment offers a clue in some cases to this group of disorders. It is perhaps worth while to do a preliminary blood examination in debilitated patients and in the occasional cases in which spreading and sloughing of the lesion take place in spite of antisyphilitic treatment. The earliest evidence of damage to the hematopoietic system calls for prompt withdrawal of further medication with arsenic. Epinephrine is used in platelet deficiency; calcium, thiosulfate and liver preparations may be used as a routine. Bleeding may be stopped by symptomatic measures. Regeneration of the leukoblastic tissues is now attempted by using pentnucleotide and similar preparations. Repeated blood transfusion may tide over a crisis and give time for other measures to be adopted in the regeneration of the hematopoietic system. No further arsenical injections are to be given in the cases in which recovery has occurred. Recurrence is said to be invariably fatal.

### J. Royal Inst. Public Health and Hygiene, London

1: 499-562 (June) 1938

- "Respite et Prospice," T. Oliver.—p. 509.  
Prevention of Minor Ailments. C. Hoyle.—p. 519.  
The Family as a Unit in National Health. L. Findlay.—p. 529.  
The National Importance of Women's Health. Margaret Salmond.—p. 537.  
The Use and Abuse of Physical Training. R. Cove-Smith.—p. 557.

### Lancet, London

2: 1-60 (July 2) 1938

- Diabetes Mellitus: Survey of Changes in Treatment During the Last Fifteen Years. G. Graham.—p. 1.  
\*Serum and Sulfanilamide in Acute Meningococcic Meningitis: Preliminary Survey Based on 113 Cases. H. S. Banks.—p. 7.  
Sulfanilamide Content of Cerebrospinal Fluid: During Treatment of Meningococcic Meningitis. E. N. Allott.—p. 13.  
Treatment of Pneumonia with 2-(*p*-Aminobenzenesulfonamido). Pyridine. G. M. Evans and W. F. Gaisford.—p. 14.  
Rupture of Cesarean Scar Treated by Simple Drainage and Followed by Pregnancy. H. Arthur.—p. 19.

**Serum and Sulfanilamide in Meningitis.**—Banks reviews three groups of cases of meningococcic meningitis: (1) thirty-eight acute cases treated with serum (meningococcus antitoxin) intensively by the venous, lumbar, cisternal and occasionally ventricular routes (from December 1933 to April 1937), (2) fifty-nine acute cases treated with intravenous serum and sulfanilamide by mouth (from May 1937 to May 1938) and sixteen acute cases treated exclusively with sulfanilamide by mouth (from April to June 1938). The fatality rate during the first five days in the first group was 16 per cent. There were no infants in this series. The cerebrospinal fluid was usually sterile within twenty-four to forty-eight hours, but in about

a fifth of the cases meningococci were present for four or five days, or occasionally longer. In the fifty-nine cases including ten infants treated with both serum and sulfanilamide, the fatality rate was 11.8 per cent. Recovery was rapid and the nursing relatively easy, the cerebrospinal fluid being usually sterile within twenty-four hours. The few exceptions to this rule, as well as two of the seven deaths, could be explained on the basis of low dosage of sulfanilamide. In the sixteen selected cases treated with sulfanilamide alone there were fifteen rapid recoveries. Sulfanilamide therapy has changed the treatment of meningococcic meningitis from a difficult to a relatively simple matter. The former high case mortality in infants appears to be yielding to this treatment. High initial dosage is advocated. The sulfanilamide level in the cerebrospinal fluid should preferably reach 5 mg. per hundred cubic centimeters in twenty-four hours and be maintained at this level for three days. Early cyanosis is not an indication for reducing the dosage. The treatment is probably effective only in the acute stage. Two patients treated after the tenth day of the disease died. Experimental and clinical evidence so far is in favor of combined serum and drug therapy, especially in severe cases.

### Practitioner, London

141: 1-116 (July) 1938

- Psychologic Diagnosis and Treatment in General Practice. T. A. Ross.—p. 1.  
Treatment of Anxiety States. R. D. Gillespie.—p. 10.  
Diagnosis and Treatment of Obsessional States. A. Lewis.—p. 21.  
Common Forms of Hysteria and Their Treatment. S. B. Hall.—p. 31.  
Suicide. S. Smith.—p. 41.  
Home versus Institutional Treatment of Neuroses and Psychoses. N. Harris.—p. 53.  
Behavior Problems of Children and Their Treatment. Grace Calver.—p. 61.  
Corns and Calluses. N. C. Lake.—p. 69.  
Modern Practice in Relation to Infectious Diseases and Disinfection. H. Paul.—p. 79.  
Illumination and Vision. R. J. Lythgoe.—p. 89.  
Diet in Health and Disease: XIII. Diet in Allergic Diseases. G. W. Bray.—p. 97.

### Tubercle, London

19: 433-480 (July) 1938

- Old Tuberculin and Purified Tuberculin: Standardization: Preparation of Stable Solutions: Part II. Purified Tuberculin. K. A. Jensen, G. Bludislev, S. Möller, A. Hansen and P. Lind.—p. 433.  
\*Experimental Studies on Treatment of Pleural Affections by Counter-irritants (Dermatopulmonary Reaction). S. Puder.—p. 448.  
Tuberculosis in British Guiana. E. Cochrane.—p. 453.  
Preparation of Tuberculin Ointment of Constant Strength. K. A. Jensen.—p. 467.

**Counterirritants in Pleural Disorders.**—Working on the assumption that the counterirritant applied to the skin caused an inflammatory process in the subcutaneous tissue and in the parietal pleura whereby the reticulo-endothelial cells would undergo an increase in number, Puder sought to demonstrate the increase of these cells by means of an intravenous injection of an electronegative, i. e. an acid, dye which would become stored in the reticulo-endothelial cells. The experiments were performed on four rabbits. The rabbit treated with mustard paper showed no distinct microscopic changes. In the second animal the area of skin treated with potassium iodide ointment containing free iodine showed ulceration and demarcation of the ulcer; the parietal pleura showed some imbibition. In the rabbit treated with tincture of iodine the skin as well as the deeper tissues and the pleura were stained a deep blue, which was less marked on the control side. There was also found in the skin an exogenous pigment probably due to the iodine. The parietal layer of the pleura was saturated with serum, the right lung showed signs of congestion and there was moderate hyperemia under the visceral layer of the pleura. The macroscopically visible changes resulting from the application of a mixture of lactic acid, orthophosphoric acid and volatile acids dissolved in alcohol and glycerin correspond to those in the rabbit treated with iodine, except for the loss of cutaneous epithelium caused by the application. Microscopic examination showed changes in the skin, hyperemia of the subpleural parts of the lung and transudation of serum into the parenchyma of the lung. From the experiments it is deduced that certain substances applied to the skin of the chest may lead to hyperemia, transudation and venous congestion in the visceral pleura and even in the lung parenchyma of the side to which they have been applied.

## Archives des Maladies du Cœur, Paris

31: 569-668 (June) 1938

- Permanent Shortening of PR Interval in Electrocardiogram Without Deformation of Ventricular Complex. A. Clerc, R. Lévy and C. Cristesco.—p. 569.
- \*Phrenogastric Syndrome of Coronaritis. C. Laubry, P. Soulié and R. Heim de Balsac.—p. 583.
- Study of Case of Total Thyroidectomy for Decompensated Cardiopathy with Documents Regarding Cardiac Repercussions of Myxedema. R. Froment and M. Jeune.—p. 593.
- Roentgenologic Aspects of Azygos Vein in Course of Cardiac Insufficiency. H. Durieu and J. Lequime.—p. 609.
- Transitory Auriculoventricular Dissociation with Deformation of Ventricular Waves Manifesting an Oscillating Block of the Right and Left Branches of the Bundle of His. E. Ledoux.—p. 618.

**Phrenogastric Syndrome of Coronaritis.**—Laubry and his associates report five cases of the phrenogastric syndrome of coronary origin. In some patients who present either the antecedents of acute coronary thrombosis or the characteristic electrocardiographic changes of a coronary lesion there develops an elevation of the left side of the diaphragm, frequently in association with an aerogastria or an aerogastrocoly. The elevation may be moderate, that is, the left half of the diaphragm may be lifted simply to the level of the right half; in other cases, however, the elevation is so great that the roentgenologic aspect is identical with that after phrenicectomy on the left side. In most but not in all cases, the diaphragmatic elevation seems to be accompanied by modifications in the gastric morphology; the stomach may present an abnormal gaseous distention or, when the diaphragmatic elevation is great, a folding of the small curvature may result. The clinical diagnosis of the phrenogastric syndrome of coronary origin is made in various ways. In some patients the coronary thrombosis is known and the aerogastria is diagnosed secondarily at the time of a roentgenologic examination; in other patients it is the roentgenologic detection of aerogastria which suggests a coronaritis, the latter being then affirmed by the electrocardiogram. To explain the phrenogastric syndrome of coronary origin, the authors suggest several hypotheses. The phrenogastric symptoms may be of the nature of a reflex to the irritative factor of the coronary lesion. Moreover, the coronaritis may elicit the changes by way of the left phrenic nerve, which is in contact with the pericardium. The authors regard as most important the role of the irritation of the pericardium, mediastinal pleura and diaphragm. They show that grave prognostic errors can be avoided if, in the presence of diaphragmatic elevation, accompanied by gaseous distention of the stomach, a search is made for signs of coronary lesions and the patient is subjected to systematic electrocardiography.

## Presse Médicale, Paris

46: 1113-1128 (July 16) 1938

- \*Comparison of Treatments (Serum, Azo Compound, Sulfanilamide) of Cerebrospinal Meningitis in Rural Colonial Regions. G. Muraz, H. Chirle and A. Quéguiner.—p. 1113.
- Massive Atelectasis in Course of Primary Pseudomembranous Bronchitis. J. Rakower.—p. 1116.

**Treatment of Cerebrospinal Meningitis.**—Muraz and his associates report their experience in the treatment of cerebrospinal meningitis in epidemics that occurred in French Nigeria. Of forty-seven patients who were treated with serum, thirty-seven were cured. They report four cases treated with the chrysoidin derivative rubiazol by mouth as well as intramuscularly. Of the four patients, two were cured. The authors describe their experiences with para-amino-phenyl-sulfanilamide (lysococcine) administered by mouth or intraspinally. During the first two days as many as sixteen tablets (four times four) were given daily (each tablet 0.3). During the following six or ten days, about half of that dose was administered (four times daily two tablets). The average number of tablets given to adults in the course of the entire treatment was 100. They emphasize the simplicity of the oral administration of the sulfanilamide preparation and say that this treatment reduced the mortality to 16.39 per cent; that is, the mortality was less than in serotherapy. They stress that sulfanilamide treatment is much less expensive than serotherapy. The combination of serotherapy with oral sulfanilamide treatment, which was employed by other investigators in twenty-three cases, resulted in cure in twenty-one of them.

## Revue Belge des Sciences Médicales, Louvain

10: 177-308 (April) 1938

- Clinical Significance of Serous Iron. F. Van Goidsenhoven, J. Hoet and J. Lederer.—p. 177.
- \*Achresthic Anemia. J. F. Wilkinson.—p. 191.
- \*Acute Erythremia. G. Di Guglielmo.—p. 200.
- Clinical Aspects and Pathogenesis of Familial Chronic Erythremia. Type Cooley. L. Pontoni.—p. 216.
- Thrombophlebitis Splenomegaly. C. Frugoni.—p. 227.
- Banti's Disease: Evolution and Present Status of Problem. E. Greppi.—p. 237.

**Achresthic Anemia.**—Wilkinson says that a megalocytic hyperchromic anemia may exist in conditions other than pernicious anemia. In earlier reports (1935, 1936) he, together with Israels, described eight cases to which they applied the term "achresthic anemia." The patients have dyspnea, palpitation and fatigue but there is no appreciable loss of weight. In contradistinction to the lemon-yellow color of the skin in pernicious anemia, the skin of these patients is rather a brownish yellow. There is no history of lingual sensitivity or ulceration, of poor digestion, of flatulence and of intestinal disturbances, and there are no neurologic or hemorrhagic symptoms. There may be an increase in the size of the liver and spleen; cardiac murmurs and an increase in the size of the heart may also occur. The gastric secretion is practically normal. The examination of the blood reveals a hyperchromic megalocytic anemia, generally grave (from 1 to 2 million erythrocytes), with an increased color index and with a variable degree of anisocytosis and poikilocytosis. The course of achresthic anemia is chronic; treatment may prolong life by months or as much as two years, but the patient never regains his health completely. Injection of liver extract should be tried, because it will furnish diagnostic information, but the doses must be larger than in pernicious anemia. It is preferable to divide the doses; treatment by depots is not indicated in achresthic anemia. If no reticulocytosis is produced or if there is only a slight increase in the number of erythrocytes, blood transfusions must be repeated until an adequate red cell count is attained. Maintenance treatment must always be energetic and should consist in injections of liver extracts (from 4 to 8 cc. weekly or more) or in the administration of desiccated stomach preparations in doses of 30 Gm. a day. When relapses occur, blood transfusions must be repeated; their effect is only temporary and as the disorder progresses they seem to become less effective. Splenectomy is contraindicated in achresthic anemia. The author says that achresthic anemia seems to be a primary disorder. It has not been possible to trace it to a hemolytic poison, to a toxemia or to another factor. Studies revealed a strong hyperplasia of the hematopoietic organs with a megaloblastic predominance. The author suggests that in achresthic anemia the hematopoietic tissues are incapable of assimilating the antipernicious factor that is present in the depots of the organism.

**Acute Erythremic Myelosis.**—According to Di Guglielmo, acute erythremic myelosis (acute erythremia) is a disease with well defined clinical and histopathologic aspects. He lists the following as the characteristic aspects: (1) a grave anemic state from the beginning of the disease, (2) irregular fever or more often remittent fever, (3) splenomegaly, which is nearly always considerable, (4) hepatomegaly, which is nearly always less severe than the splenomegaly, (5) acute evolution, the disease lasting generally from one to two months and always having a fatal outcome, (6) the presence of a larger or smaller number of mostly basophilic erythroblasts in the peripheral blood, (7) primary hyperplasia of the erythropoietic tissue with arrest of the maturation in the primary phases of cellular evolution, and (8) proliferation of the elements of the reticulo-endothelial system. In the typical cases these symptoms are always faithfully reproduced, but this disease like other morbid processes appears also in incomplete and atypical forms. The diagnosis is comparatively easy. The etiology is completely unknown. The mode of onset, the development and the clinical aspects suggest an acute infectious process, but all investigations (serologic tests, hemocultures, inoculations of necrotic material into various mediums and so on) have given negative results. The disease occurs in both sexes and in all ages. The prognosis is unfavorable. All the typical cases described so far failed to respond to treatment with liver, arsenic, iron or blood transfusion and all ended in death.



**Schweizerische Medizinische Wochenschrift, Basel**

68: 881-900 (July 23) 1938. Partial Index

Adaptability of Healthy and Diseased Persons. P. H. Rossier.—p. 881.  
Rheumatism and Sympathicus. H. Iselin.—p. 884.  
Combined Photoprotective Action of Oil of Bergamot and Vitamin C. G. Miescher.—p. 888.

Exophthalmic Goiter: Experimental Study with Regard to Pathology of the Disease. F. Blum.—p. 889.

Scrous Meningitis in Pfeiffer's Glandular Fever. W. Huber.—p. 892.

**Serous Meningitis in Pfeiffer's Glandular Fever.**—Huber says that the combination of Pfeiffer's glandular fever with meningeal symptoms cannot be regarded as rare, for of ten patients with glandular fever observed at his clinic three had a noticeable meningism. Lumbar puncture disclosed in two of these three cases pathologic aspects of the cerebrospinal fluid of a nature indicating a lymphocytic meningism. In the third case the cell count of the cerebrospinal fluid was at the limit of normality but there were no other changes. Five other patients with glandular fever but without signs of meningism were subjected to spinal puncture; in three of these the pressure of the cerebrospinal fluid was found increased; in two the cell count was increased and in two pathologic protein curves were detected. These changes in the cerebrospinal fluid without clinical signs of meningitis are of interest because they indicate a high incidence of involvement of the meninges in Pfeiffer's glandular fever. This meningeal involvement is probably due to a great affinity of the still unknown causal agent for the central nervous system. The author states further that, whereas two of his three patients with glandular fever and meningism presented the typical signs, the third case illustrates with what severity the meningeal symptoms may appear in glandular fever. He gives a detailed clinical history of this case. He further directs attention to the great variations in the symptomatology of glandular fever, pointing out that some of the symptoms may be severe or moderate or even entirely absent. However, in order to arrive at the diagnosis it is usually considered that the following should be present: febrile course, involvement of the lymphatic apparatus and the characteristic blood picture; the latter is regarded as the most important for the diagnosis. The blood picture of glandular fever is characterized not by a simple lymphocytosis but rather by qualitative changes in the lymphatic elements.

**Pediatrics, Naples**

46: 573-668 (July 1) 1938

\*Bacteriologic Etiology of Bronchopneumonia in Infants. A. Pouché.—p. 573.

Waterhouse and Friderichsen's Syndrome: Clinical and Anatomohistologic Study. I. Biddau.—p. 598.

Considerations on Infant Mortality in Hospitals. E. Zecca.—p. 621.

Intestinal Hemorrhage in Course of Pneumonia: Case. T. Aversa.—p. 628.

Benign Lymphocytic Acute Meningitis with Blood Mononucleosis: Case. F. Cislighi.—p. 637.

**Bronchopneumonia in Infants.**—Pouché made bacteriologic studies on sixty infants suffering from primary bronchopneumonia. Cultures were done with the pharyngotracheal secretions and with the material taken from the lung or the pleural cavity by puncture, either during life or immediately after death. Hemocultures were also made. In some cases any of the foregoing procedures was repeated or cultures with two different materials were done. Several bacteria, especially pneumococci of type IV and hemolytic streptococci were identified. The author found that cultures with the pharyngotracheal secretion are of scanty diagnostic etiologic value. Noncausal bacteria frequently appear in the cultures. Hemocultures are also of scanty diagnostic value. Cultures from lung or pleural material showed in all but one of the author's cases pneumococci of type IV and hemolytic streptococci. The former was predominant in the cases which evolved to recovery whereas the latter was predominant in the cases which ended in death of the patient. According to the author the disagreement of authors in the literature as to the etiology of primary bronchopneumonia in infants depends on the various methods used in the bacteriologic researches. The disease is caused by pneumococci of type IV. Pneumococcus antiserums do not control the disease because of the fact that up till now they have been prepared with pneumococci of types I, II and III, which are not the etiologic agents.

**Riforma Medica, Naples**

54: 1073-1108 (July 16) 1938

\*Ulcers and Gastroduodenitis in Splenohepatic Congestive Inflammation: Cases. E. Greppi and A. Forconi.—p. 1075.

Vascular Alterations in Buerger's Disease. C. Mastrosimone.—p. 1078.

Briançon's Symptom in Diagnosis of Echinococcus Cysts. E. Cicchitto.—p. 1083.

**Ulcer and Gastroduodenitis in Splenomegaly.**—According to Greppi and Forconi, gastric, duodenal and gastroduodenal inflammation and passive congestion associated with similar conditions of the spleen and the liver show an early phase of gastric, duodenal or gastroduodenal ulcer. The condition is frequent in man. The lesions predominate in the duodenum, rarely in the stomach. The clinical symptoms vary from mild to grave digestive disturbances. In certain cases there is either gastralgia or the complete syndrome of gastric or gastroduodenal ulcer. In all cases the chemistry of the gastric secretion is altered and there is a tendency to the production of local hemorrhages. Roentgen examination of the gastrointestinal tract shows the various evolutionary phases of gastric or gastroduodenal ulcer from simple duodenitis to typical ulcer. The authors report nine such cases. Roentgen examination of the gastrointestinal tract showed simple or erosive duodenitis in seven cases, phlogosis of the stomach and cardias with perivisceritis in one case and a chronic ulcer of the lesser curvature of the stomach with perivisceritis in another. In all cases the clinical symptoms corresponded to the evolutionary phase of the ulcer. In one case the repeated examination of the gastrointestinal tract showed simple duodenitis, which evolved to erosive duodenitis with formation of punctiform niches in four months. In another case, roentgen examination showed the regressive evolution of a small juxtapyloric ulcer to diffuse gastroduodenitis in the course of four months of medical treatment. The authors believe that inflammation and passive congestion of the spleen alone or in association with similar conditions of the liver are due to local disturbances of the preportal circulation. The condition results in the establishment of a special form of diffusing and progressive inflammation and local passive hyperemia, which induces the development and evolution of gastric, duodenal or gastroduodenal ulcers.

**Endokrinologie, Leipzig**

20: 223-304 (July) 1938

Amount of Gonadotropic Substance in Adrenal Cortex in Different Species of Animals. F. Hoffmann.—p. 223.

\*Some Endocrine Influences on Fat Metabolism of Culture of Human Leukocytes. G. Wallbach.—p. 230.

Treatment of Adiposogenital Dystrophy. A. Margitay-Becht.—p. 241.

**Endocrine Influences on Fat Metabolism of Leukocytes.**—Wallbach says that in earlier studies he was able to show that the fat metabolism can be observed on the culture of human leukocytes. Even under normal conditions, staining with sudan III will reveal the depositing of fat in the human leukocytes undergoing growth and differentiation in cultures. The author thinks that these fat deposits can probably be explained by infiltrative processes of the plasma lipoids and by the splitting off of lipoids from lipid-protein compounds. The fat metabolism undergoes fundamental changes when lipoids are added to the culture medium. However, there is not necessarily an increase in the fat deposits following the addition of certain lipoids. Rather there is evidence that the culture of leukocytes has a certain autoregulation as regards its lipid metabolism, because some fats, such as liquid petrolatum or milk, cause a reduction in the fat deposits of the growing human leukocytes. Such manifestations seem to suggest that not only the lipoids but also stimulating substances contained in them play a part in the absorption of fat by the leukocytes. The aim of the investigations described in this report was to determine the influence exerted by some endocrine and chemical substances on the fat metabolism of cultures of human leukocytes. The author experimented with some preparations of the thyroid, of the testes, of the pancreas, of the adrenals and of the hypophysis; also with sodium taurocholate, pepper

and phlorhizin. Contrary to expectations, the addition of thyroxine to the culture did not cause a reduction in the lipid deposits but rather a tremendous increase. Insulin was found to cause finely granulated fat deposits in the cells during the first five days. During the later stages of cultivation, considerable fat deposits could be observed in the macrophages and fibroblasts. Hypophysin produced a great increase in the lipid deposits. Epinephrine produced finely granulated fat deposits during the first five days of the culture; on the sixth day the increase in fat deposits was especially great, but after that the fat deposits disappeared temporarily. In the presence of an extract of the testes the cellular fat deposits were moderate on the first day; during the following five days there was slight increase, but in the end all fat deposits had disappeared. Phlorhizin was found to cause a temporary but pronounced increase in fat deposits. Bile caused at first moderate deposits, then a great increase, but finally there was a consumption of intracellular fat. Pepper caused a disappearance of the fat deposits. The author further reports how the simultaneous addition of lipoids and glandular products or other stimulating substances acts on the intracellular fat metabolism. He found that the same glandular preparations and stimulating substances may differ in their effects on the fat metabolism, depending on the lipoids that were administered simultaneously. Regarding the significance of these observations, the author says that an increase in fat deposits does not necessarily indicate an increased fat metabolism. Under certain conditions the absence of fat deposits may indicate an especially active metabolism.

### Klinische Wochenschrift, Berlin

17: 993-1032 (July 16) 1938. Partial Index

- Tendency to Obesity in Patients with Silicosis. G. Schlomka, K. Naumann and A. Bechstein.—p. 999.  
Studies on Pathogenesis of Muscular Dystrophy. K. Kuré and K. Ohshima.—p. 1003.  
Modification of Vital Capacity of Lung by Hindering Venous Discharge from Extremities. G. Budelmann.—p. 1009.  
\*Pathologic Aspects of Electrocardiogram Made After Work Tests in Children. P. Laurentius.—p. 1011.  
Production of Ascorbic Acid Deficiency in Living Animals by Intravenous Injection of Colloidal Silver Chloride. T. Bersin, S. Raabe and H. J. Lauber.—p. 1014.  
Dietetic Treatment of Obesity. R. Boller.—p. 1018.

**Electrocardiographic Tests on Children.**—Laurentius says that in children the early recognition of latent cardiac defects is of especial importance. Children develop cardiac defects chiefly during diphtheria and during acute rheumatic polyarthritis. During the acute stages of these disorders the diagnosis of the cardiac defects is usually simple, but later the estimation of the functional capacity of the heart may cause considerable difficulties. In this paper the author reports electrocardiographic studies on forty-four children. Of these thirty had had a diphtheric myocarditis, twelve had had a rheumatic polyarthritis and two had congenital cardiac defects. Each child was subjected to three electrocardiographic tests: one was made while the child was at rest, one immediately after physical exertion and one three minutes after exertion. It was found that the electrocardiogram made after exertion is a valuable aid in the functional examination of the heart in that it often permits the recognition of latent cardiac defects. Summarizing his observations in the course of the electrocardiographic tests, the author says that he observed wandering of the origin of the impulse, occurrence of intra-auricular conduction disturbances, partial retardation of the conduction between auricle and ventricle, frequent appearance of extrasystoles and signs of myocardial impairment. His investigations showed that although the electrocardiographic record made while the child is at rest is normal and clinical signs are absent, there are nevertheless a certain number of children in whom the electrocardiogram that is made after exertion will reveal pathologic changes. From these observations he concludes that all children who have had a diphtheric myocarditis should be protected against exertions for a time so as to avoid undesirable complications. In apparently compensated valvular lesions after articular rheumatism, disturbances are also often detected in the electrocardiogram that is taken after exertion. These children likewise should be protected against exertion. Strenuous gymnastics and sports and similar

exertions should be avoided for a time. Only after all pathologic signs have subsided may the children be permitted a gradually increasing amount of exertion.

### Münchener medizinische Wochenschrift, Munich

85: 1057-1096 (July 15) 1938. Partial Index

- Bullous Dermatitis Observed in Harvesting Workers. W. Krantz.—p. 1057.  
\*Menstrual Disturbances in Genital Infantilism and Remarks on Incidence of Hypoplasia Among Patients of Women's Clinic of Tübingen. K. Klöppner.—p. 1060.  
\*Isolated Thrombopenia Caused by Chronic Benzene Poisoning. B. Kern.—p. 1062.  
In What Stage Should Carcinoma of the Cervix Uteri Be Clinically Diagnosed? H. Hinselmann.—p. 1071.  
Extension of Disease Process in Central Nervous System in Heine-Medin's Disease. G. Peters.—p. 1073.  
Necessity of Repeated Roentgen Examinations in Case of Late Manifestations of Tuberculous, Bronchogenic Dissemination. H. Bartsch and S. Zollner.—p. 1078.

**Menstrual Disturbances in Genital Infantilism.**—Klöppner reports observations on 190 women with genital hypoplasia and disturbances in the menstrual cycle. These 190 cases were observed among 510 women with genital hypoplasia. With the exception of thirteen cases in which there existed only a hypoplasia of the uterus, the genital infantilism was generally characterized by a low perineum, hypoplasia of the labia, narrow vagina, low vaginal vault, small uterine cervix and body, high position of the ovaries and small parametrium. The author observed also that genital infantilism is not restricted to certain structural types. It was found in persons with various bodily builds, but it seemed especially frequent in the somewhat masculine types. Regarding the incidence of genital infantilism, he says that in the years 1929-1933 it was almost twice as high as in the years 1907-1918. He thinks that the deficient nutrition during the war years is probably the chief cause of this increase, for the condition is especially frequent among the women who at the time of the insufficient nutrition were in the stage of their first sexual development. However, this deficient nutrition is not the only cause. Among the author's material there was evidence that considerable inbreeding might be an important factor in genital infantilism. Discussing the menstrual disturbances in the women with genital hypoplasia, he says that they occurred in 37 per cent (190 of 510). Among these 190 cases there were ten of primary amenorrhea, twenty-nine of secondary amenorrhea, twenty-two of hypomenorrhea, thirty-two of oligohypomenorrhea, twenty-four of menorrhagia and seventy-three of metrorrhagia. In view of the fact that a late menarche was formerly regarded as one of the characteristics of genital infantilism, it seems surprising that thirty-six of these 190 patients had a relatively early menarche and that 103 had a normal menarche. Of the ten patients with primary amenorrhea, eight had a rudimentary uterus and six had signs of a generalized infantilism. In the women with secondary amenorrhea the anamnesis often revealed a late menarche. Painful menstruation was complained of by 141 of the women. The author thinks that in order to determine the nature of the menstrual disturbance a microscopic examination of the endometrium is essential; in the material that is discussed in this paper, curettage was done in 128 cases. After giving tabular reports of the results of these examinations, he discusses endocrine therapy of the menstrual disturbances concurring with genital hypoplasia. He thinks that, in cases of hypomenorrhea and oligomenorrhea, estrogen may at first be tried alone. However, he warns against the indiscriminate use of estrogen in all cases of genital hypoplasia with menstrual disturbances, pointing out that in cases of cystic glandular hyperplasia progesterin is required and that in cases of amenorrhea both progesterin and estrogen have to be given.

**Thrombopenia in Benzene Poisoning.**—Kern says that impairment of the hematopoietic organs is one of the symptoms of chronic benzene poisoning. However, there is not always a uniform impairment of the various functions of the bone marrow. Impairment of the leukopoiesis seems to be most frequent, but anemias with considerable inhibition of the erythropoiesis have likewise been observed in a number of cases, and reductions in the number of thrombocytes with a tendency to hemorrhages has been noted in some cases. The impairment of all functions of the bone marrow is comparatively rare in human subjects; it occurs only in the severest cases. It is difficult to estimate

the incidence of thrombopenias in benzene poisoning, because in many of the cases reported in the literature a counting of the thrombocytes had been neglected. However, hemorrhages and scurvy-like symptoms dominated the clinical picture in many cases of chronic benzene poisoning, and investigators who did take a thrombocyte count often discovered thrombopenias. In none of the cases previously reported was a severe thrombopenia the only manifestation of an impairment of the bone marrow, and so the author feels justified in reporting the history of such a case. The patient, a farmer aged 58, had benzene poisoning while working with a defective benzene motor in an insufficiently ventilated building. Study of the blood picture revealed that the thrombocytes decreased to zero and then increased again above the normal level. The thrombopenia was accompanied neither by leukopenia nor by anemia. The case is noteworthy also because of the involvement of the central nervous system in the form of a bilateral spastic paralysis of the arms and legs and somnolence. The author thinks that the paralytic symptoms were probably the result of multiple hemorrhages into the central nervous system; the fact that the paralytic symptoms appeared at the time when the hemorrhagic diathesis was in its severest stage, and the observation that the nervous disturbances subsided and the cutaneous hemorrhages disappeared after the thrombocytes had reached a normal level again, seem to corroborate this. After the paralytic symptoms subsided sciatica developed, but this too subsided again after several weeks.

### Zeitschrift f. menschliche Vererbungslehre, Berlin

22:1-128 (July 4) 1938

School Work and Psychic Constitutional Type. W. Kramaschke.—p. 1.  
Can Constitution Be Changed by Premature Birth? T. Brander.—p. 50.  
Alcohol and Offspring. T. Brander.—p. 61.

\*Essential Hypertension in Uniovular Twins, Aged 23. E. Klemola.—p. 69.

Pneumonia in Twins. E.-G. Becker.—p. 77.

Electrocardiogram in Twins. G. W. Parade and W. Lehmann.—p. 96.

\*Excess Mortality of Boys as Result of Recessive Sex-Linked Hereditary Factors. F. H. Haase.—p. 105.

**Hypertension in Uniovular Twins.**—Klemola reports the discovery of essential hypertension in twin sisters aged 23. He thinks that the case is noteworthy not only because essential hypertension is rare at such an early age but also because no such case has as yet been reported in twins. After reporting the clinical histories of the twin sisters, he cites factors which indicate that the twins were enzygotic. Then he discusses the role of heredity in essential hypertension in the light of research on twins. In this connection he cites authors who demonstrated in studies on twins that the blood pressure values of uniovular twins have a greater similarity than have those of binovular twins. In the twins whose histories are reported, the essential hypertension was discovered in 1934, when they were 23 years of age, but it is probable that they had had it several years before. Moreover, they have been under observation during the four years since 1934 and the blood pressure has remained uniformly elevated in recent times (160-210 mm. of mercury). It is noteworthy that roentgenoscopy has failed to disclose a hypertrophy of the heart, but this absence of cardiac hypertrophy has been noted by others in young persons with essential hypertension. On the other hand, electrocardiography disclosed signs of myocardial defects, probably the results of attacks of myocarditis, which may have concurred with the repeated attacks of angina, to which the twins had been subject. By means of the work test, considerable changes could be elicited in the electrocardiogram which were identical with those in coronary insufficiency. The family history of the twins indicates that this was a case of recessive transmission of hypertension.

**Excess Mortality in Boys.**—Haase reports statistical studies on the excess of the mortality in boys over that of the mortality in nurslings in general. Previous to the decade covered by his statistics, such studies had been carried on by Lenz and later by Schirmer. Haase observed the same relations between the figures as had those investigators. He shows tables which indicate that the mortality of nurslings has decreased in all countries in recent decades but that the excess mortality of boys has increased everywhere. A comparison of the statistical reports of different countries reveals that a high excess mortality for boys corresponds to a low nursing

mortality and vice versa. Moreover, if different years are compared it can be seen that according as the excess mortality of boys is the lower, the higher is the nursing mortality and vice versa. The author says that his observations are a further corroboration of the theory suggested by Lenz, that the excess mortality of boys is chiefly the result of recessive, sex-linked hereditary factors. As is explained by Lenz, such hereditary factors do not have to be frequent to result in an excess mortality of boys. For instance, if it is assumed that the X chromosome of human subjects contains 250 hereditary units, this signifies an excess mortality of 2.5 for 100 if one of every 10,000 units is recessively lethal. Recently Lenz further amplified his theory, stating that the suspected pathologic hereditary factors may be stable or unstable as regards the environment. If most of them are stable in this respect, a high excess mortality for boys must be expected in the presence of a low nursing mortality because, if the mortality of nurslings is low, the fatalities that do occur are chiefly caused by internal, hereditary causes; that is, the excess mortality of boys must become especially noticeable. In addition to the theory of Lenz, the author also cites views and observations of von Pfandner, Landauer and Rietz. He shows that Landauer's objection to the theory of Lenz is not tenable.

### Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

82:3303-3410 (July 2) 1938. Partial Index

Syndrome of Hanot. G. A. Kreuzwendich von den Borne.—p. 3307.  
Juxta-Articular Nodosities: Several Cases. W. L. L. Carol and J. R. Prakken.—p. 3315.

\*Treatment of Postencephalitic Parkinsonism. J. C. Broekema.—p. 3323.  
Malaria Therapy of Dementia Paralytica. C. van der Heide.—p. 3331.  
Habitual Dislocation of Patella. B. C. C. Wösten.—p. 3337.

**Treatment of Postencephalitic Parkinsonism.**—Broekema first describes the observations he made in Penegrossi's clinic in Rome, pointing out that at this and several other Italian clinics postencephalitic parkinsonism is treated with an extract of the root and the rootstock of *Atropa belladonna*. The extract has an alkaloid content of 0.02 per cent and is prepared from plants that have an especially high alkaloid content. After describing how the extract is prepared, the author discusses the mode of administration. At the onset of the treatment the doses are small; that is, from 1 to 2 cc. is given. Gradually the quantities are increased. The optimal doses vary greatly (between 6 and 300 cc. a day). The average daily dose for women is from 60 to 90 cc., for men from 60 to 120 cc. The larger doses are fractionated, the largest quantity being given in the evening, so that the headaches likely to result from medication with the belladonna extract will concur with the period of sleep. In the beginning of the treatment it may also be desirable to give the extract by clysmia; this form of administration has the same effect as the oral one. Complete intolerance for the extract is extremely rare. During the treatment the patients should abstain from smoking, alcohol and coffee. The diet should be chiefly vegetarian. Moderate exercise in open air, massage, gymnastics, psychotherapy to overcome the depression and work therapy have to be combined with the belladonna therapy. After giving a summary report about the results obtained with this treatment in 1,346 cases in Rome, the author gives detailed clinical histories of four patients treated by him. He shows that the improvement appears in some patients sooner than in others. All his patients had previously been treated unsuccessfully with other measures. The author hopes that this treatment will find a more general application in the Netherlands.

### CORRECTION

**Myelomatosis.**—In the abstract from *Hospitalstidende*, Copenhagen, entitled "Myelomatosis," published on page 760 of the August 20 issue of *THE JOURNAL*, the sentence which read "In the two cases of hyperproteinemia and hyperglobulinemia and hypoglobulinemia there was abundant Bence Jones protein in the urine" should have been as follows: "In the two cases with hyperproteinemia and hyperglobulinemia the urine did not contain Bence Jones protein; in the other two cases, with hypoproteinemia and hypoglobulinemia, there was abundant Bence Jones protein in the urine."

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## HISTORICAL ASPECTS OF IRON THERAPY IN ANEMIA

CHAIRMAN'S ADDRESS

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Iron is an essential part of the hemoglobin molecule. It is the most valuable remedy in the treatment of an anemia in which the primary defect is a deficiency in hemoglobin. While iron has been prescribed for almost three centuries, its therapeutic use is far older than the rational explanation of its action, and opinion concerning its value has changed greatly from time to time. Physicians long ago prescribed iron for chlorosis, a disease first described in 1520 by Johannes Lange. Later, others taught that medication with inorganic iron was worthless. Only recently have clinicians learned anew the most effective preparations and methods of administration.

To Sydenham<sup>1</sup> (1624-1689) belongs the credit for introducing iron into clinical medicine for the treatment of anemia. Iron salts had been employed by physicians for other purposes since the time of Hippocrates. The earlier applications of iron were more often symbolic, with the idea that iron was indicative of strength and was imbued with some peculiar force by Mars, the god of war. Iron was even designated *maris* by the alchemists. It seemed logical that a condition characterized by weakness, as is anemia, should be treated with a remedy suggesting power or strength.

Sydenham included chlorosis under the general head of hysteria, which he said "is the commonest of diseases next to fever." In speaking in 1681 of the treatment of the chlorosis of hysteria he said: "All which showed that the chief curative indication is the restoration of the blood—the fount and source of the spirits." He suggested bleeding and purging and continued:

After these evacuations I comfort the blood and the spirit belonging to it by giving a chalybeate 30 days running. This is sure to do good. To the worn out or languid blood it gives a spur of fillip whereby the animal spirits which before lay prostrate and sunken under their own weight are raised and excited. Clear proof of this is found in the effect of steel in chlorosis. The pulse gains strength, the face (no longer pale and death-like) a fresh ruddy color. Here, however, I must remark that with weak and wornout patients the bleeding and purging may be omitted and the steel be begun with at once.

From the Cleveland Clinic.

Read before the Section on Pharmacology and Therapeutics at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 16, 1938.

1. The Works of Thomas Sydenham, translated from the Latin by Dr. Greenhill, edited by R. G. Latham, London, Sydenham Society, 1850, vol. 2, p. 97.

Sydenham preferred to give the "steel in substance." His next choice was "iron or steel filings steeped in cold Rheinish wine." He also said that chalybeate water used for the same purpose was nothing more or less than iron in liquid form. Two prescriptions which he suggested contained from  $7\frac{1}{2}$  to 15 grains (0.5 to 1 Gm.) of iron filings to be given daily, which would certainly be effective in the treatment of an iron deficiency anemia.

For the next 150 years iron continued to be used for the treatment of anemia but with indifferent and varying results. Lemery and Geoffroy in 1713 demonstrated for the first time iron in the ash of the blood.<sup>2</sup> In 1746 Menghini found that the iron of the blood could be increased by feeding iron-containing food.<sup>3</sup> These discoveries came long after Sydenham's therapeutic application of iron but provided a rational basis for the use of iron. Crocus martis was recommended in doses of 10 to 40 grains (0.6 to 2.5 Gm.) for dropsy and green sickness (chlorosis) in "A Compleat History of Drugs," translated from the French of Pierre Pomet by Lemery and Tounefort and published in London in 1712.<sup>2</sup> The crocus martis was prepared by exposing plates of iron to dew, by sprinkling iron filings with rain water or water and honey or by heating iron white hot and plunging it into melted sulfur.

Pierre Blaud,<sup>3</sup> however, first emphasized the specific action of iron in the treatment of chlorosis and suggested a method of iron medication which has never been improved on. Blaud's original paper appeared in 1831, many years before a red blood count was first done or a hemoglobin estimation was first made. Blaud even recognized the essential nature of chlorosis. He thought that the disease "arises from a faulty formation of blood as a result of which the blood is an imperfect fluid or the coloring matter is defective so it is no longer suitable for stimulating the organism and maintaining the regular exercise of its functions." He then said that iron preparations restore to the blood the most important principle which has been lost, its coloring substance, and suggested the use of a combination of iron sulfate with potassium carbonate which "has never foundered in our hands."

Blaud reported the treatment of thirty patients, all of whom were cured in from ten to thirty-two days, and said that previous failures had been due to the use of too small a dose of iron: "Who has not seen chlorotics pine away for an entire year although they have been subjected to the prolonged influence of iron

2. Christian, H. A.: A Short Sketch of the History of the Treatment of Chlorosis with Iron, *Med. Lib. & Hist. J.* 1: 176-180, 1903.

3. Blaud, Pierre: On the Chlorotic Maladies and on a Method of Specific Treatment of These Affections, *Rev. med. franç. et étrang.* 1: 337, 1832.

water or of ferric hydrate?" He emphasized that his excellent results were due to the use of the preparation he recommends and the large dose.

Blaud's original prescription was as follows:

Ferrous sulfate .....	5 ss
Potassium carbonate .....	3 ss

Pulverize separately the two substances to a very fine powder, then blend very exactly. Add mucilage tragacanth, pound strongly, and make into a mass which will be divisible in forty-eight pills.

This prescription gives the equivalent of 5 grains (0.3 Gm.) of ferrous sulfate, or approximately 2 grains (0.1 Gm.) of ferrous carbonate, in each pill.

The method of administration suggested was:

- 1, 2, 3 day one pill before breakfast and at bedtime.
- 4, 5, 6 day one pill three times a day
- 7, 8, 9 day two pills in the morning and evening
- 10, 11, 12 day two pills three times a day
- 13, 14, 15 day three pills twice a day
- 16 and follow-  
ing days four pills three times a day

Blaud thus used from 6 to 25 grains (0.4 to 1.6 Gm.) of ferrous carbonate daily, or the equivalent of from 15 to 60 grains (1 to 4 Gm.) of ferrous sulfate. He suggested that the favorable action of his prescription was due to the finely divided state of the ferrous carbonate and the addition of potassium carbonate. He emphasized the two important principles of iron therapy—the use of a ferrous salt and large doses. Little has been added since to these fundamental principles of iron medication. A year after his original communication Blaud<sup>4</sup> criticized a formula suggested by Cotterau, saying:

I am so anxious that so precious a remedy which has never failed in my hands and which I consider as a specific in chlorotic diseases be employed in suitable doses to obtain the complete success from it. I am hastening to communicate to you the manner of preparation which I have always used.

He again described the dosage and repeated his original prescription.

Blaud deserves a prominent niche in the history of the development of iron therapy. He was born in 1774, at Nîmes, graduated in medicine in 1804, practiced all his life in Beaucaire and died there in 1858.<sup>5</sup> Many modifications of his formula have been suggested, usually under the name "Blaud's pills," so it is often impossible to tell from the name just what the pill contains. The official method of preparation described in the French codex medicamentarius differs little from the original method of preparation. Pierre Blaud's nephew, August Blaud, a chemist, made a specialty of these pills<sup>6</sup> over the entire world under the name "veritable pills of Doctor Blaud." The formula in the British as well as in the American pharmacopeia differs from the original in composition and in the dose recommended.

For many years the fundamental principles of iron therapy introduced by Blaud were followed. Thus Felix von Niemeyer,<sup>7</sup> whose textbook of medicine was for many years the Bible of German medicine, stated

that he followed the principles outlined by Blaud with great success. He used the following prescription:

Ferrous sulfate .....	3 ss
Pulverized potassium carbonate and tartrate	3 ss
Tragacanth to make.....	96 pills

Each pill is equivalent to 2½ grains (0.16 Gm.) of ferrous sulfate. He suggested from three to five pills three times a day. He said of chlorosis:

Three boxes cures the most persistent case. At Magdeburg and Greifswald I often had to send my recipe for the pills for a great distance, my good fortune in the treatment of chlorosis—to which by the by I owe to the rapid growth of my practice—having given me a great reputation as the possessor of a sovereign remedy against the disease.

He went on to say that it was argued that large doses of iron were not necessary, but he continued:

The number of patients who have recovered in my practice through the employment of Blaud's pills after they had taken small doses of tincture of iron and wine of iron for years without positive effect and had repeatedly visited Pyrmont and Dubing is large enough to warrant the assertion that we shall cure chlorosis most speedily and surely by means of ferruginous preparations which can be tolerated in large doses and of these Blaud's pills stand highest in the list.

Immerman<sup>8</sup> in 1877 stated that "large doses [of iron] cure chlorosis far more certainly and quickly than small ones." He also emphasized that the dose is far more important than the compound selected. He recommended ferrous sulfate in a prescription and dosage similar to Blaud's.

Osler<sup>9</sup> in 1892 said "I have for years in the treatment of chlorosis used with the greatest success Blaud's pills made according to and given according to the formula in Niemeyer's textbook in which each pill contains 2 gr. of the sulphate of iron." He suggested from one to three pills three times a day.

About 1890 a definite change in iron therapy began to take place. Smaller doses of iron were used, poorer results were obtained and the opinion became widespread among clinicians that iron was of little value in the treatment of anemia. There were several reasons for this change. Bunge<sup>10</sup> taught most dogmatically at this time that inorganic iron was converted into sulfide and not absorbed from the intestinal tract and so could not have any beneficial effect on anemia. He suggested the use of organic iron only. Although MacCallum<sup>11</sup> demonstrated that inorganic iron was absorbed from the upper part of the intestinal tract and Stockman<sup>12</sup> proved that iron sulfide would relieve anemia, Bunge's teachings influenced iron therapy profoundly. Perhaps the most important influencing factor, however, in stopping the use of large doses of iron was the teaching of Quincke<sup>13</sup> and of von Noorden<sup>14</sup> that no more than 1½ grains (0.1 Gm.) of metallic iron daily was necessary in the treatment of chlorosis. These clinicians in

8. Immerman, H.: *Cyclopedia of Practical Medicine*, William Wood & Co., 1877, vol. 16, p. 560.

9. Osler, William: *The Principles and Practice of Medicine*, ed. 1. New York, D. Appleton & Co., 1892, p. 695.

10. Bunge, S.: *Ueber die Eisentherapie*, Verhandl. d. Cong. f. inn. Med. 13: 133-147, 1895.

11. MacCallum, A. B.: *On the Absorption of Iron in the Animal Body*, J. Physiol. 16: 268-297, 1894.

12. Stockman, R.: *Treatment of Chlorosis by Iron and Some Other Drugs*, Brit. M. J. 1: 881-885 (April 29), 942-944 (May 6) 1893.

13. Quincke, H.: *Ueber Eisentherapie*, Volkmann's Samml. klin. Vortr. 129: 313-354 (July) 1895.

14. von Noorden, K.: *Chlorosis*, in Nothnagel, C. W. H.: *Encyclopedia of Practical Medicine*, translated by Alfred Stengel Philadelphia, W. B. Saunders Company, 1909.

4. Blaud, Pierre: *Antichlorotique Pills*, Bull. gén. de thérap. 2: 154-155, 1832.

5. Note on Pierre Blaud, Chron. méd. 21: 316-318, 1914.

6. Humphrey, John: *The Origin of Blaud's Pills*, Pharm. J. 16: 643-644, 1903.

7. von Niemeyer, Felix: *A Textbook of Practical Medicine*, translated by G. A. Humphrey and C. E. Hockley, New York, D. Appleton & Co., 1869, vol. 2, p. 76.



turn were probably influenced by the demonstration that only a few milligrams of iron are actually metabolized each day.

As a result of such teachings, iron began to be used only in small doses, with little effect, so clinicians really believed that iron was of no value in the treatment of anemia. Williamson and Ets<sup>15</sup> as late as 1925 thought they had proved experimentally that iron does not influence anemia produced in rats and dogs by bleeding. They stated as a result of their experiments that "inorganic iron is absorbed and may be found in the liver and spleen but is not converted into hemoglobin" and concluded that "in the light of the foregoing experiments the administration of inorganic iron has no therapeutic value in anemia." Further experimental studies have demonstrated the error of these conclusions. Thus Heath, Strauss and Castle<sup>16</sup> have shown that the iron absorbed by a person with iron deficiency anemia is converted quantitatively into hemoglobin.

Recently the value of large doses of iron if iron is needed has been emphasized anew by numerous workers. One of the first was Lichtenstein,<sup>17</sup> who showed in 1918 that the anemia of the premature infant responded to large doses of iron. Meulengracht<sup>18</sup> in 1923 suggested large doses for the treatment of the anemia of adults on the basis of Lichtenstein's work. He used 45 grains (3 Gm.) of reduced iron daily, or thirty times the dose thought sufficient by Quincke and von Noorden. Even before Meulengracht, Lindberg<sup>19</sup> had shown that the anemia of influenzal infections responded to large doses of iron. Now every clinician recognizes the value of iron and the need for giving large doses.

The most recent development in iron therapy has been the renewed emphasis on the greater potency of ferrous salts. While any iron preparation is effective if given in large enough doses, very much less of the ferrous compounds needs to be taken.<sup>20</sup> Thus the two fundamental principles of iron therapy, large doses and the use of a ferrous salt, now generally accepted, only confirm what Bland, Niemeyer, Immerman, Osler and others thought and practiced. These principles, forgotten by clinicians for many years, have only recently been learned anew. Such rediscoveries emphasize again our debt to the great clinicians of the past.

15. Williamson, C. S., and Ets, H. N.: The Value of Iron in Anemia, *Arch. Int. Med.* 36: 333 (Sept.) 1925.

16. Heath, C. W.; Strauss, M. B., and Castle, W. B.: Quantitative Aspects of Iron Deficiency in Hypochromic Anemia, *J. Clin. Investigation* 11: 1293-1312 (Nov.) 1932.

17. Lichtenstein, A.: Hamatologische studien on Frühgeborenen Kinder, *Jahrb. f. Kinderh.* 88: 387-390, 1918.

18. Meulengracht, E.: Large Doses of Iron in Different Kinds of Anemia, *Acta med. Scandinav.* 58: 594, 1923.

19. Lindberg, G.: Ueber anämie nach Influenza-Nebst einiger Bemerkungen zur Eisentherapie der anämien, *Acta med. Scandinav.* 56: 162, 1922.

20. Wits, L. J.: The Therapeutic Action of Iron, *Lancet* 1: 1 (Jan. 4) 1936.

**The All-Vegetable Diet.**—There have been careful and thorough investigations of the nutritive possibilities of the all-vegetable diet. There are various combinations of plant materials that will keep a human being alive, after a fashion, but no combination has been found which will provide "optimum" nutrition for the omnivorous animals that human beings are. While strict vegetarianism is possible it is unsatisfactory and more than a little difficult. There is no exact explanation of this except the generalized one that animal proteins have more nearly the same combinations and proportions of the amino acids which we need than do the vegetables.—Furnas, C. C., and Furnas, S. M.: *Man, Bread and Destiny*, New York, Reynal & Hitchcock, 1937.

## SURGICAL LESIONS OF THE ADRENAL GLANDS

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AND

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Tumors involving the adrenal gland may take their origin from the cells of the adrenal cortex, which originates from the mesoderm of the wolffian body or the medulla, which originates in structures giving rise to the sympathetic nervous system. The most frequently occurring adrenal tumor is that involving the cortex. Several excellent summaries of reported cases have appeared in the literature. To the signs and symptoms thought to be pathognomonic of such tumors, Gallais<sup>1</sup> has applied the name "le syndrome génito-surrénal," and Krabbe<sup>2</sup> that of "adrenal hirsutism."

In general, it may be said that one of the chief characteristics of tumors of the adrenal cortex is their tendency to produce changes in the sexual characteristics of the person affected. This characteristic is not what one would expect from a study of adrenal insufficiency, as the outstanding features of this condition are disturbances in electrolyte metabolism which usually are not associated with any marked alterations in the primary or secondary sexual characteristics. It is not at all clear why adrenal tumors should function in this fashion. Embryologic and chemical studies have thrown some light on the problem. Since the gonads and the adrenal cortices have a common embryologic origin, it is not surprising to find that the two structures have cells with common histologic characteristics and secrete hormones which have similar chemical formulas.<sup>3</sup> It is not inconceivable therefore that the cells of tumors of the adrenal cortex may secrete compounds which have the properties of male and female sex hormones in addition to the properties of the hormone or hormones which influence electrolyte metabolism and are essential to life. After removal of this type of adrenal tumor the secondary sexual characteristics have reverted essentially to normal, as described by Collett,<sup>4</sup> Holmes<sup>5</sup> and ourselves.

Although there are a variety of tumors which originate in the medullary substance of the adrenal gland, the most important surgically are the paragangliomas, which frequently are called "pheochromocytomas." They are benign in character and are characterized clinically by attacks of paroxysmal hypertension and the subjective symptoms associated with it. The similarity of origin of the sympathetic nervous system and the adrenal medulla explains paroxysmal hypertension, the characteristic symptom of these medullary tumors.

From the Division of Surgery (Dr. Walters) and the Division of Medicine (Dr. Kepler), the Mayo Clinic.

Read before the Section on Surgery, General and Abdominal, at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 15, 1938.

1. Gallais, Alfred: *Le syndrome génito-surrénal; étude anatomoclinique*, Paris, 1912.

2. Krabbe, K. H.: *The Relation Between Adrenal Cortex and Sexual Development*, New York M. J. 114: 4-8 (July 6) 1921.

3. The chemical similarity between the members of the group of male and female sex hormones has been appreciated for some time. More recently it has been shown that hormones of similar chemical structures, which are capable of maintaining the health of adrenalectomized animals, can be extracted from the adrenal cortex.

4. Collett, Arthur: *Genito-Suprarenal Syndrome (Suprarenal Virilism) in a Girl One and a Half Years Old, with Successful Operation*, *Am. J. Dis. Child.* 27: 204-218 (March) 1924.

5. Holmes, Gordon: *A Case of Virilism Associated with a Suprarenal Tumor; Recovery After Its Removal*, *Quart. J. Med.* 18: 143-152 (Jan.) 1925.

Excellent results have persisted for many years following removal of adrenal paraganglioma, as reported by Mayo,<sup>6</sup> Shipley,<sup>7</sup> the Porters<sup>8</sup> and Walters.<sup>9</sup>

#### ADRENAL CORTICAL TUMORS

**Symptoms and Diagnosis.**—The symptoms depend on the age and sex of the patient at the onset of the illness, the type of tumor, the degree of its endocrine activity and the duration of the disease. Adrenal cortical tumors occur most frequently among young women, although in our series of eight cases two of the patients were children; one was 9 years of age and the other 2. In twenty of the reported cases the patients were males and in fourteen of these cases the patients were boys.

When a hyperfunctioning tumor occurs after puberty, the changes which tend to reverse the sex occur, such as virilism of women and feminism of men. By virilism is meant the appearance of masculine, and the recession of feminine, physical and mental traits. The menses cease, there is an excessive growth of hair on the face and body, the breasts atrophy, the clitoris enlarges and the entire habitus may change to the masculine type. On the other hand, when the disease originates among children, precocious puberty usually occurs. Among boys the precocious puberty is likely to be of the masculine type with the precocious development of external genitalia of the mature type. Among girls the puberty is heterologous; that is, it tends to progress along masculine lines with hypertrophy of the clitoris, deepening of the voice, masculine distribution of hair and, interestingly enough, sometimes with precocious menstruation. In one of our cases, the patient, who was a child aged 2 years, had had two or three menstrual periods.

Difficulty in diagnosis arises from the fact that in some instances the symptoms resulting from adrenal cortical tumors may resemble closely those that occur in Cushing's disease (basophilic adenoma of the pituitary body). The latter disease occurs for the most part among young women, and in contrast to adrenal cortical tumors (which vary in their clinical manifestations) produces a rather constant clinical picture. In pituitary basophilism the clitoris usually is not enlarged, but absence of this finding does not exclude a tumor of the adrenal cortex. At the present time there is no single clinical criterion which can be used to differentiate the two conditions. The consequence of this fact is that the presence of an adrenal cortical tumor should be excluded in all cases in which the symptoms of Cushing's disease are present. To our minds, this is most accurately done by exploration of the adrenal glands. At the same time, when it is desired, one can open the peritoneal cavity and examine the ovaries to exclude the possibility of masculinizing tumors of the ovaries (usually arrhenoblastoma) and, very rarely, granulosa cell tumors which result in the male type of hirsutism, amenorrhea and hypertrophy of the clitoris. However, such tumors practically never cause diabetes, hypertension, osteoporosis or the other incidental symptoms associated with adrenal cortical tumors.<sup>10</sup>

In children, tumors and inflammatory processes in the region of the pineal body and contiguous structures

may be associated with sexual and somatic processes. Finally there are, in addition, many women who have varying degrees of the hirsutism, hypertension and debility for which no adequate basis can be found.

**Laboratory Aids.**—Routine laboratory studies have been of little aid in the differential diagnosis of these tumors. Frank<sup>11</sup> recently has reported a very high concentration of estrogenic substance, equal only to that encountered in pregnancy, in the urine of four patients who had adrenal cortical carcinomas. Negative reactions were encountered in specimens of urine obtained from fifteen patients who had some symptoms of pituitary basophilism or who had the adrenal cortical syndrome. In this group of fifteen patients one had a hypernephroma, one had an adrenal medullary paraganglioma, one had an adrenal cortical adenoma, and one had adrenal hyperplasia. Frank concluded that "it seems likely that adrenal cortical carcinoma alone of adrenal tumors increases the amount of estrogenic substance in the urine to as high as from 1,000 to 10,000 mouse units per liter, with a negative pregnancy test." In the cases in our series the results of this test were negative. It however was not performed in all cases. It would appear, therefore, that a positive Frank test would strongly favor a diagnosis of adrenal cortical carcinoma but that surgical exploration should not be deferred because of absence of large amounts of estrogenic substance in the urine. Substances which have the properties of the male sex hormone have been found by a number of workers in the urine of patients with adrenal cortical tumors. Use of this finding in diagnosis cannot be made until more information is available regarding the occurrence of such substances in the urine of normal women and patients suffering from diseases other than those involving the adrenal cortices.

Calhll and his associates<sup>12</sup> recently have emphasized a diagnostic procedure, introduced by Carelli,<sup>13</sup> by which the adrenal glands are delineated in roentgenograms which are made after the injection of air into the perirenal fascial space. Our experience with this procedure has been very limited and we are not in a position to pass final judgment on its merits or its limitations. In some of the cases reported in the literature, satisfactory visualization of an adrenal tumor by this method was obtained when the pyelograms were normal. It is interesting to note that in the case reported by Lukens and others<sup>14</sup> "the residual emphysema from the air injection was an added source of difficulty" during operation.

We feel that in case of doubt the adrenal glands should be explored surgically, provided the clinician is familiar with the early symptoms of acute adrenal insufficiency and if adequate facilities are at hand for treatment of this emergency should it arise. There are two objections to this point of view: First, an appreciable number of patients will be disappointed because no benefit results from the operation; second, it has been stated that in cases in which advanced symptoms

6. Mayo, C. H.: Paroxysmal Hypertension with Tumor of Retroperitoneal Nerve: Report of a Case, *J. A. M. A.* 89: 1047-1050 (Sept. 24) 1927.

7. Shipley, A. M.: Paroxysmal Hypertension Associated with Tumor of the Suprarenal, *Ann. Surg.* 90: 742-749 (Oct.) 1929.

8. Porter, M. R., and Porter, M. F., Jr.: Report of a Case of Paroxysmal Hypertension Cured by Removal of an Adrenal Tumor, *Surg., Gynec. & Obst.* 50: 160-162 (Jan.) 1930.

9. Walters, Waltman: The Surgical Aspects of Suprarenal Abnormalities, editorial, *Surg., Gynec. & Obst.* 56: 242-243 (Feb.) 1933.

10. The recent case reported by E. H. J. Malignant Ovarian Tumor Associated with J. Cancer 32: 1-29 [Jan.] 1935) is one of the

11. Frank, R. T.: A Suggested Test for Cortical Adrenal Carcinoma, *J. A. M. A.* 100: 1121 (Oct. 2) 1937.

12. Calhll, G. F.; Loeb, R. F.; Kurzrok, Raphael; Stouat, A. P., and Smith, F. M.: Adrenal Cortical Tumors, *Surg., Gynec. & Obst.* 62: 287-313 (Feb.) 1936.

13. Carelli, M. H. Y.: Sur le pneumopéritoine et sur une méthode personnelle pour voir rein sans pneumopéritoine, *Bull. et mém. Soc. méd. hóp. de Paris* 2: 1409-1412 (Oct. 28) 1921.

14. Lukens, F. D. W.; Flippin, H. F., and Thigpen, F. M.: Adrenal Cortical Adenoma with Absence of the Opposite Adrenal: Report of a Case with Operation and Autopsy, *Am. J. M. Sc.* 193: 812-820 (June) 1937.

of basophilism are present there is considerable danger of infection. In our experience this has not interfered with postoperative progress in cases in which cortical tumors were not found; in two cases Cushing's disease was discovered at necropsy months after the patient had been dismissed from observation. Certainly there is very little justification for the death of patients who receive roentgen therapy of the pituitary body when the lesion responsible for their symptoms is an adrenal cortical tumor which might have been eradicated successfully had the patient been operated on early in the course of the disease.

*Treatment.*—The treatment of these lesions is, of course, surgical removal of the tumor; this has been accomplished in seven cases at the Mayo Clinic without any mortality.<sup>15</sup> Two of these tumors were very large and weighed 600 Gm. and 800 Gm. respectively, while the others averaged approximately 2 to 4 cm. in diameter. Although microscopic examination showed early malignant changes in all the tumors, in five cases the tumor was definitely encapsulated and recurrence has not taken place. In the two cases in which the tumors were very large, penetration had extended beyond the capsule; the growth was attached to the diaphragm in one case and to the inferior vena cava in the other case. In both cases the lesions were malignant; there were signs and symptoms of recurrence and both patients died within two years after the operation.

The most important factor in surgical therapy, to our minds, is the anticipation, prevention and control of postoperative adrenal cortical insufficiency. This consists essentially of the preoperative and postoperative administration of potent extracts of the adrenal cortex<sup>16</sup> and parenteral and oral administration of adequate amounts of a solution of sodium chloride and sodium citrate and the administration of a diet that is low in potassium. These procedures tend to control the impending adrenal cortical insufficiency which has probably been responsible for the high mortality (50 per cent previously reported by Lukens and his associates, by Cahill and his associates and by Scholl<sup>17</sup>). The method outlined is essentially that which at the clinic has been found to be effective in controlling various degrees of adrenal insufficiency in Addison's disease and has been used in all our cases of suspected adrenal cortical tumors. Its effectiveness is illustrated by operative recoveries in seven cases; in two of the cases the adrenal glands on the opposite side were found to be atrophic. It must also be remembered that the outstanding characteristic of any hyperfunctioning adenoma is its tendency to produce its hormone irrespective of the needs of the body for this hormone. The remaining nonadenomatous endocrine tissue of the type from which the adenoma took its origin can be expected to hypofunction. This remaining nonadenomatous tissue may be functionally inadequate or be actually atrophic on histologic examination. By tiding the patient over the crisis with the administration

of potent adrenal extracts and by concentrating the sodium ions in the body, it has been our experience that eventually the nonadenomatous endocrine tissue will regain its capacity to produce a sufficient amount of hormone to meet the needs of the body as regeneration occurs. In brief, postoperative adrenal insufficiency should be anticipated and should be prevented by continuous treatment throughout the postoperative period; during the entire postoperative period the patient should be watched carefully for any premonitory signs of acute adrenal failure. Among the more important signs of such failure are anorexia, hiccup, nausea, vomiting, weakness, insomnia, apathy or restlessness, an increasing pulse rate and a falling blood pressure. Pyrexia accelerates the development of adrenal insufficiency and is therefore poorly tolerated. These clinical manifestations may precede any material change in the chemical composition of the blood. The blood pressure should be recorded every four hours and the concentration of blood sugar, plasma chlorides and blood urea should be determined daily. If, at any time, the condition of the patient is the least suggestive of adrenal insufficiency, more vigorous treatment should be instituted or treatment should be resumed if it has been discontinued. It is not generally appreciated that fatal adrenal failure can develop within a few hours. In consequence of this fact it is easy for the physician to be lulled into a false sense of security. A good rule of thumb to remember is that danger lies in undertreatment rather than in overtreatment.

#### ADRENAL MEDULLARY TUMORS

*Signs and Symptoms.*—Adrenal medullary tumors occur with much less frequency than those involving the cortex and few cases have been reported in the literature. Paroxysms of hypertension accompanied by vasomotor phenomena such as pallor, tachycardia, headache and apprehension are the characteristic symptoms associated with adrenal medullary tumors. Sweating is another of the vasomotor phenomena which occurs in some cases, although sweating does not occur after an injection of epinephrine. Precipitation of these paroxysms is obtained by undue physical and mental exertion and they can be precipitated experimentally by the "cold test"<sup>18</sup> (the introduction of the feet or the hands in water at a temperature of 4 C. for one minute). The appearance of the patient and the physical signs are of little help in making the diagnosis unless the tumor is of sufficient size to be palpated during abdominal examination or to depress the kidney abnormally, as shown by urographic examination; this depression was not evident in four cases observed at the clinic. In one case, which recently was reported by Borch-Johnsen,<sup>19</sup> the tumor had attained a huge size and weighed 3,000 Gm.

Patients with hyperfunctioning adrenal medullary tumors withstand surgical procedures very poorly. One of the characteristics of hyperfunctioning adrenal tumors is their tendency to cause sudden death. There are a number of instances on record in which the tumor was discovered accidentally at necropsy following sudden death after minor or major surgical procedures, such as extraction of a tooth, hemorrhoidectomy or amputation of a gangrenous extremity. Because of this

15. Walters, Waltman, and Kepler, E. J.: Adrenal Cortical Tumors and Their Treatment: A Study of Seven Operated Cases, *Ann. Surg.* 107: 881-898 (June) 1938. Walters, Waltman; Wilder, R. M., and Kepler, E. J.: The Suprarenal Cortical Syndrome with Presentation of Ten Cases, *ibid.* 100: 670-688 (Oct.) 1934.

16. We have been fortunate in having at all times an ample supply of potent extract prepared by Kendall. We have not had any recent first hand experience with any of the commercial preparations. Before using any one of the commercial preparations one should have had, if possible, some experience with its use in the treatment of acute adrenal insufficiency as it occurs in Addison's disease. The dosage necessary may be considerably larger than that recommended by the manufacturer.

17. Scholl, A. J.: Tumors of the Adrenal Cortex, *J. Urol.* 39: 81-92 (Feb.) 1938.

18. Horten, B. T., and Brown, G. E.: Histamine-like Effects on Gastric Acidity Due to Cold, *Proc. Staff Meet., Mayo Clin.* 7: 367-371 (June 22) 1932; Systemic Histamine-like Reactions in Allergy Due to Cold: A Report of Six Cases, *Am. J. M. Sc.* 178: 191-202 (Aug.) 1929.

19. Borch-Johnsen, E.: An Operated Case of Paraganglioma Gland. Suprarenal Sin. Associated "with the Suprarenal Sympathetic Syndrome," *Acta chir. Scandinav.* 80: 171-180 (Nov. 30) 1937.

tendency, patients with hyperfunctioning adrenal tumors stand surgical procedures very poorly.<sup>20</sup>

**Diagnosis.**—Owing to the relative infrequency of tumors of the adrenal medulla, the possibility of their presence is not likely to be suspected. In one of the four cases seen at the clinic the diagnosis was made before operation and in another case the tumor was found following the unusual persistence of a hypertension subsequent to bilateral splanchnic resection. In the third case, which was reported by Dr. C. H. Mayo, the tumor was suspected preoperatively and was found at abdominal exploration. These three patients survived and no further paroxysms of hypertension have occurred. In the fourth case the tumor was found at necropsy. In one of these cases the hypertension was somewhat continuous rather than paroxysmal. It must be remembered that paroxysms of hypertension occasionally may occur in the absence of medullary cortical tumors. We have seen one such case in which the only important postmortem finding was petechial hemorrhages in the pons.

Thus far we have referred to the most important surgical lesions of the adrenal medulla, namely the paragangliomas, which are benign in character. Another benign tumor, the ganglioneuroma, produces no characteristic clinical symptoms and is usually found unexpectedly at necropsy. Malignant tumors which involve the adrenal medulla are the neuroblastomas which metastasize early to the liver and lungs in the adult and to the skull and long bones in children. The diagnosis of these lesions is usually made only after metastasis has occurred. Surgical treatment directed toward their removal is without benefit on this account. The usual preparation of patients for surgical procedures is all that is required preliminary to operation in cases of adrenal medullary tumors.

#### SURGICAL APPROACH TO THE ADRENAL GLANDS

Although transthoracic, transpleural and retroperitoneal approaches to the adrenal glands have been carried out, in our opinion the approach which gives the best opportunity for minute and careful inspection of the gland is through a posterolumbar incision similar to that used in exposing the kidney. After the fascia of Gerota has been incised, the perirenal fat is reflected from the upper pole of the kidney and the kidney is retracted downward; this exposes the inferior and posterior aspects of the adrenal gland. It is possible in this manner to study the gland accurately from every side without disturbing the circulation. Care is taken to prevent injury to the blood vessels which enter the adrenal gland on its mesial and posterior aspect. Although we have seen one case of small multiple adenomas, minute in size, in other cases adenomas have been recognized grossly with ease; these have varied from 2 to 15 cm. in diameter. When larger tumors are present, practically the entire adrenal gland may be thinned out and destroyed, with the exception of a fringe a few millimeters in length, which can be recognized by its brilliant yellow as being adrenal cortical tissue. It must be remembered that on the right side the adrenal gland will be found to be in direct contact with the inferior vena cava. Usually the blood vessels supplying an adrenal

tumor are much larger than the blood vessels which supply the normal adrenal gland. On this account, care must be taken to ligate them accurately.

#### SUMMARY

Symptoms produced by a tumor of the adrenal cortex depend on the sex and age of the patient at the time the tumor begins to function. These tumors are encountered most frequently among women and are characterized by variable changes in secondary sexual characteristics, such as cessation of menstruation, occasionally hypertrophy of the clitoris, abnormal growth of hair with masculine distribution and characteristic lesions of the skin such as a florid complexion accompanied by acne and purplish striations. Among girls, tumors of the adrenal cortex tend to produce precocious puberty which is more masculine than feminine in character. The disease seldom occurs among males, either young or old. It is characterized by precocious puberty of the masculine type in boys and by feminism in the male adult. The difficulty in making a diagnosis arises from the fact that the clinical picture is not pathognomonic. Similar clinical pictures result from any one of a number of diversified pathologic processes, such as hyperplasia of the adrenal cortices with or without thymic tumors, tumors of the gonads, and various intracranial lesions not directly involving the pituitary body. Routine laboratory studies have been of little aid in differential diagnosis although the presence of a high content of estrogenic substance in the urine is suggestive of the presence of adrenal cortical carcinoma provided pregnancy is excluded. Injection of air about the adrenal gland has been of aid in localizing some of the adrenal tumors. In forty reported cases in which operation was performed, the mortality was approximately 50 per cent. It is our opinion that the absence of mortality in seven consecutive cases in which operation was performed at the clinic is attributable to an increased understanding of the disturbance of physiologic processes which follows removal of almost all hyperfunctioning tumors of the endocrine system and to an increased knowledge of the pathologic physiology of Addison's disease. Improved methods of treating acute adrenal insufficiency have thereby been developed. These consist primarily of administration of large quantities of sodium chloride and sodium citrate, daily administration of an adequate amount of adrenal cortex extract and the use of a low potassium diet, throughout the entire postoperative period.

The most important medullary tumor is benign in character and is characterized clinically by attacks of paroxysmal hypertension. Reference has been made to four cases of adrenal medullary tumors seen at the clinic; in three of the cases operation was performed and the results were excellent.

In our experience, the most accurate surgical approach to the adrenal glands has been through retroperitoneal and posterolumbar incisions.

#### ABSTRACT OF DISCUSSION

DR. HOWARD C. NAFFZIGER, San Francisco: The authors have set forth clearly the clinical aspect of tumors of the adrenal cortex and of the medulla. The good results from surgical treatment are a great credit to the surgeon. I believe, however, that no small measure of the success is due to the preparation for operation and to the postoperative management. This should be stressed particularly. Without meticulous attention to the measures that have been recommended, surgical intervention will be associated with far greater risk. A diffi-

20. Belt, A. E., and Powell, T. O.: Clinical Manifestations of the Chromaffin Cell Tumors Arising from the Suprarenal Medulla: Suprarenal Sympathetic Syndrome, Surg., Gynec. & Obst. 59: 9-24 (July) 1934. Hick, F. K.: A Suprarenalin-Producing Pheochromocytoma of the Suprarenal Gland: Report of a Case, Arch. Path. 15: 665-674 (May) 1933. Paul, Fritz: Die krankhafte Funktion der Nebenniere und ihr gestaltlicher Ausdruck, Virchows Arch. f. path. Anat. 282: 256-401 (Oct. 17) 1931.

culty in diagnosis has been mentioned, namely differentiation of the symptoms of adrenal cortical tumors from those of Cushing's disease. There is an implication that a basophilic adenoma of the pituitary is responsible for the symptoms of Cushing's disease. Numerous anatomic, pathologic and biochemical investigations, however, have brought forth facts that stand in the way of complete acceptance of this view. One must not ignore the fact that in so-called basophilism of the pituitary gland there is either hyperplasia or an adenoma of the adrenal cortex. I have been inclined to the view that there may be two distinct clinical pictures associated with hyperfunction of the adrenal cortex, whether it is caused by hyperplasia or by tumor. First, there is the adrenogenital syndrome, in which there is reversal of sex. This is the picture which the authors have associated with adrenal cortical tumors. Second, there is Cushing's syndrome, in which I feel that the symptoms also arise from altered cortical function. In Cushing's disease there is evidence of overproduction of cortical hormone. Moreover, there are disturbances in electrolyte metabolism which differ from those found in Addison's disease. In cases of so-called basophilism, it is my feeling that the possibility of primary adrenal involvement must be kept continuously in mind, for most of the symptoms of the disorder are caused by such involvement. This is true regardless of the focal point in which the disease had its origin, and concerning which there is still plenty of opportunity for debate.

DR. HANS LISSER, San Francisco: A group at the University of California Medical School have for many years been intensely interested in these bizarre sexual endocrinopathies. There are a vastly greater number of patients who exhibit only some of the characteristic manifestations of the adrenocortical syndrome, mostly abnormal hirsutism, with perhaps lengthened intervals between periods but without actual amenorrhea, enlarged clitoris or hypertension. We have hesitated to advise adrenal exploration in the absence of a demonstrable lesion. Unfortunately no medical or endocrine therapy is of any avail in producing loss of the abnormal hair which is so embarrassing to many of these young women. Following Cahill's paper on "The Visualization of Adrenals by Injection of Air through the Perirenal Fascia, via Petit's Triangle," we undertook this diagnostic procedure, about two years ago. The tumor cases mentioned antedated the use of air. We have injected air in fifty cases during the last two years, obtaining wonderfully clear delineation of the upper poles of each kidney, but in only one instance have we been fortunate in demonstrating a definitely enlarged adrenal. Rarely is the tumor large enough to palpate, being tucked up deep under the diaphragm. We hoped that this maneuver would enable us to pick up tumors not large enough to feel or large enough to distort the pyelogram. We have had no unhappy complications from this procedure although occasionally patients have experienced a sense of pressure high up under the sternum immediately after the introduction of air, have become rather faint and cyanotic and have coughed for about fifteen minutes; we assumed that this came from either irritation of the diaphragm or the accidental introduction of air into the pleural cavity. I am inclined to question one statement made, that "very rarely, granulosa cell tumors result in the male type of hirsutism, amenorrhea and hypertrophy of the clitoris." Possibly a reference to this in the literature has escaped my attention; it is a most unlikely occurrence, however, since granulosa cell tumors elaborate large quantities of female sex hormone and therefore produce true sexual precocity in the little girl, menorrhagia in the adult woman and late menstruation in women of 60 to 70 years of age. It is not a masculinizing tumor. Unfortunately there is no "measuring stick" of adrenal function, such as exists for the kidney. Therefore in the presence of an adrenal tumor one is unable to estimate the functional integrity of the other adrenal. Consequently there is a decided element of risk in removing one adrenal and, as the authors have emphasized, death has followed if the remaining adrenal was inadequate. Most important therefore is the preoperative preparation and the postoperative watchfulness, described by Walters and Kepler, in avoiding and combating postoperative adrenal insufficiency during the week after operation.

DR. WALTMAN WALTERS, Rochester, Minn.: The point stressed by Dr. Lisser is well worth recording. Dr. Lisser has referred to danger of injection of air in the renal and adrenal regions. I am told that at the last meeting of the American Association of Genito-Urinary Surgeons two deaths were reported following injections of air. I used the method in three cases and was frightened in each one by the occurrence of spasm of the diaphragm, asthenia, cyanosis and air hunger and I have discontinued it. I think it is safer and of greater practical value in these cases to explore the suprarenal glands themselves. I agree also that in several of our cases the adrenal tumor was of insufficient size to be demonstrable by injection of air.

## A CONSIDERATION OF PRESENT DAY NEWBORN NURSERY PRACTICE

### SUGGESTIONS FOR IMPROVEMENT

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Fatal diarrhea of the newborn occurring as a local hospital epidemic has within recent years been reported with increasing frequency.<sup>1</sup> In the face of such reports, it is conceivable that present day newborn nursery practices may not protect the infant from the introduction and spread of contagion. The increasing number of reports of such outbreaks justifies this appraisal of the nursery.

The term "newborn nursery" is used to identify that portion of the obstetric floor set aside for the care and common housing of the newborn. This consideration is not directed to any institution in particular but rather at nursery practice in general. This is an evaluation of the average newborn nursery in the average hospital.

The introduction of contagion may occur easily, sometimes obviously and at other times more subtly. The normal flow of traffic frequently is a potent source of danger. There is scarcely any group of patients in the hospital more thoroughly exposed than the infants in the nursery. Because of the concentration in one area, all infants are exposed to each nurse whether assigned to him or not; to each obstetrician, his own and his neighbors'; to each pediatrician, his own and the rest; to each orderly; to each laundry man; to each charwoman; to each janitor, and to every person who enters the nursery. The recently delivered infant covered with vaginal secretion and occasionally with maternal stool is another significant source of trouble.

The formula and other liquids given to the babies are not always above suspicion. Rigid care is not always exercised in their preparation or storage.

The question of infections of the upper part of the respiratory tract of mild degree among persons having business in the nursery is another problem. Its evaluation is difficult. Few institutions require that nurses and interns with "colds" or "sore throats" be put to bed or at least stay out of the nursery until well. Unfortunately, the physician is a chief offender. It is not unusual to see physicians with colds in the nursery, handling these infants, relying on masks to protect the infant and confine the infection to the carrier. If the

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1. Rice, J. L.; Best, W. H.; Frant, Samuel, and Abramson, Harold: Epidemic Diarrhea of Newborn; Preliminary Considerations on Outbreaks of Highly Fatal Diarrhea of Undetermined Etiology Among Newborn Babies in Hospital Nurseries, *J. A. M. A.* 109: 475-481 (Aug. 14) 1937.



infection is due to a virus, it is difficult to see how several layers of gauze will stop the virus when a Berkefeld filter cannot. If the infection is bacterial, the known inefficiency of most types of masks after short periods of time<sup>2</sup> makes them ineffective. Fingering of masks and "on again-off again" tactics of the wearer complete the ease against the mask as far as infections of the respiratory tract are concerned.

Little attention has been paid to the mother as a potent source of infection. In gonorrhea, how more intimately than from vagina to vulva, which occurs in the process of birth, can a newborn infant be exposed? Yet no special treatment is used to prevent the disease. How more easily can maternal bowel contents come in contact with the infant's mouth and subsequently its gastrointestinal tract than at the time of birth? How more intimately can an infant be exposed to a purulent infection of the skin than its own mother's acne, yet no special care is taken to protect it?

The enumeration of the sources of contagion is limited only by the imagination. The laundry, the innocent carrier, the insignificant skin lesion, the missed or sub-clinical gonorrhea, the unobserved, improperly functioning sterilizing equipment, the warm refrigerator, the plumbing cross of tap water and sewage may each have a varying degree of importance. From all these the individual infant must be protected. Yet few institutions are so set up that each and every avenue of approach is guarded and a routine check is made repeatedly.

The introduction of contagion into the nursery from without, while important, is relatively insignificant when the problem of transfer from patient to patient is considered. This transfer may occur with the greatest ease. Probably the most important single factor is the concentration of infants into one large unit called the nursery. This concentration is frequently nothing less than crowding. In a majority of nurseries the bassinets are arranged in convenient rows, touching each other at their sides or at best separated by a scant foot. In these instances the infants are separated from one another by the framework of the bassinet or a screening pad or cloth. This crowding, regardless of any of the intricacies of technic, is ideal for the spread of infection. It is impossible under these conditions to take or replace an infant without contaminating the neighboring bassinets. The changing of diapers, the disposal of regurgitated feeding, the changing of linen, the rearranging of positions all become impossible without the contamination of adjacent cribs.

In nearly all instances, the breaks in technic result in no harm. The errors are innocuous until a potent pathogen is introduced. The crowding then becomes a factor of spread rather than a factor of blockade.

The dressing table or work place is unimpeachable in theory alone. Few institutions require a complete change of sheets or other covering where an infant has lain. At most a clean diaper, easily wet through, is spread under the infant. Its shirt and other clothing are laid aside close by, contaminating other clean areas.

The neat tray of oils, cotton, powder and ointments may contain agents in the transfer of infection, not by the obvious contamination of their contents but by the more subtle contamination of their covers and outer surfaces. Few institutions require that these

materials be handled with freshly washed hands, tissue paper or forceps. Time frequently does not permit of such finesse.

The physician's and attendant's clothing must also be considered in the introduction and transfer of contagion. Providing gowns for nurses and physicians does not solve this particular problem unless an individual gown is used for each infant. Common gowns hanging in dressing rooms next to the physician's coat enhance rather than block the spread of infection.

Washing of hands before each procedure, no matter how simple, is only infrequently required. It is no uncommon sight to see an attendant change an entire group of babies while keeping the bottles propped on one another without any thought of using soap and water. The nurse, since she must handle the infants frequently, is a greater menace than the physician, especially in the understaffed nursery. Where adequate nursing service is provided, this factor is proportionately reduced. Yet at this point it is fair to question how a simple rinsing with soap and water, and rarely is it more than that, can possibly be adequate when surgical procedures require much greater thoroughness. On the other hand, no skin could possibly stand up under surgical scrubbing in a newborn nursery.

At this point the question of fairness or accuracy of this criticism of technic as now constituted may be considered. If the foregoing is granted, the relative infrequency of epidemic or even absence of epidemic in many nurseries might be looked on as an argument against this criticism. The absence of such a catastrophe in individual nurseries should be considered as due entirely to good fortune rather than to active vigilance. Once infection has gained entrance, only those who have been active in stamping it out can truly evaluate and appreciate the situation.

A certain few institutions have worked out elaborate techniques, meticulous to a fine degree.<sup>3</sup> This is especially true of nonobstetric nurseries. Every possible safeguard, check and block has been carefully considered and, in addition, machinery has been set up for its daily maintenance at a high standard of efficiency, with air-borne infection alone remaining uncontrolled. The recent development of ultraviolet ray traps may see even this eliminated.<sup>4</sup> But these conditions exist in special instances. It is extremely doubtful, and experience in previous years supports the doubt, that such fine techniques cannot exist without innumerable breaks. Investigation impartially conducted sometimes reveals that the technic has broken down completely during long periods with apparently no serious consequences.

Running through this entire consideration of present day methods of nursery technic and management appears one constant factor; that is, the nursery itself. The nursery as it is now known, with its crowding, its traffic, its communal equipment, its constant flow of easily infected and susceptible patients, is the thing at fault. It is the nursery that is wrong and not the technic. The control of contagion in such a group should be automatic and entirely free of the conscious effort of good technic and practice. The techniques are adequate but the conscious effort to main-

2. Blatt, M. L., and Dale, M. L.: Bacteriological Study of Efficiency of Face Masks, Surg., Gynec. & Obst. 57: 363-368 (Sept.) 1933.

3. Sauer, Louis: Enteritis: Its Control and Prevention by Dick Diet Kitchen and Nursery Technic, Am. J. Dis. Child. 50: 1159-1163 (Nov.) 1935.

4. Major, C. B., and Wilder, T. S.: Ultraviolet Light for Air Sterilization in Ward for Infants: Discussion of Preliminary Work, Hospitals 11: 87-90 (Nov.) 1937. Hart, Deryl: Control of Air-Borne Pathogenic Organisms with Particular Reference to Use of Special Bacterial Radiant Energy: Preliminary Report, Arch. Surg. 34: 874-894 (May) 1937.

tain them is the factor which breaks down. The care of infants should be so constituted that any accidental contaminant is blocked from further spread in the same manner that a fireproof building makes the spread of fire difficult. A fireproof building may burn but it does so with difficulty; likewise contagion might spread, but only with great difficulty.

The barrier that naturally suggests itself is the barrier of dispersion. The greater the dispersion of patients the more difficult becomes the spread of infection. The greater the dispersion of patients, the less the possibility of infection from direct or indirect sources. The wider the distribution, the less the possibility of contamination from obvious or obscure sources. At this point it must be emphasized that dispersion does not and cannot replace technic. It can only complement. It cannot replace.

The simplest form of dispersion, but at that the least effective of the methods of control, is that of treating each infant as a unit with complete equipment for that unit. This implies cubicle treatment, individual gowns, linen, locker, bedside stand, clothing, utensils and all the other necessities, all within easy reach of a wash stand, a method of treatment used in children and infant wards. The technic used would be that of the contagious unit. While this would be a step ahead, the dangers of "carriers" and the almost certain absence or ignoring of technic by a definite though usually small group of interns and very busy physicians would quickly make a mock of the technic unless it were guarded by a tyrant. Unfortunately this tyrant would be there only part of the time.

A dispersion of greater degree occurs if this cubicle system is used in conjunction with multiple nurseries of two to four baby capacity. In this scheme complete equipment for these infants in cubicles would form a unit close to or an integral part of a block of a similar number of maternal beds. This, of course, would mean wholesale alterations of existing obstetric floors but should be easy to incorporate in new structures.

Infection occurring in such a unit would be more readily confined and controlled than if it occurred in a nursery of twenty or thirty infants. A corollary to this method would be to house each baby in the mother's room. The objection to this method may have the weight of present day practice, but this is surely the more natural and to a certain extent more humane. Twenty minute visits every three or four hours is scarcely natural, nor will that be true after the mother and baby go home.

These methods of dispersion still have the objection of exposing the infant to a certain definite though diminished hospital traffic and to common services and supplies. They also imply redesigning and planning of obstetric floors. Further dispersion is possible and extremely desirable. The proposals to be cited may appear to be steps backward but should be considered as advances from positions now made untenable by experience.

The first proposal would be that of limiting the hospital stay to a much shorter period, ideally forty-eight hours or less after delivery. This would maintain for the physician the convenience of the hospital delivery but would limit contact to a shorter time.

The second proposal, the ultimate of dispersion, is frank old fashioned home delivery brought up to date.

What is to prevent some far-seeing, pioneering obstetrician from equipping a mobile obstetric unit so

complete and so cunning that all the advantages of the hospital could be had at home with none of the dangers inherent in the crowded nursery?

#### SUMMARY AND CONCLUSION

The spread of fatal diarrhea of the newborn raises the serious question of whether present day practices are entirely beyond reproach. Critical appraisal of housing, communal equipment, nursery traffic and technic show them in many instances to be faulty to a dangerous degree. Correction of these faults as they occur in the present setup is extremely difficult, especially if this correction follows lines of increased regulation or tightening of technic. Dispersion of the nursery in all probability is the simplest solution of this problem. Considered as increasing degrees of dispersion and safety are (1) cubicle units each completely equipped; (2) nurseries of no more than three or four beds to be closely associated with a similar number of maternal beds; (3) newborn infants housed in rooms adjacent to or in the mother's room; (4) hospital delivery and discharge within forty-eight hours, and (5) the ultimate of dispersion, frank home delivery.

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#### ABSTRACT OF DISCUSSION

DR. ERNEST WOLFF, San Francisco: The problem which Dr. Spivek has discussed still gives a headache to pediatricians and obstetricians alike. Not only do epidemiologists criticize the hospital nursery but psychiatrists today are objecting to the psychologic hazards of separating mother from child in an artificial hospital situation. Nevertheless, in a modern city the hazards and awkwardness of home delivery in most instances far outweigh any danger from a well conducted nursery. I think that, with a well thought out routine, epidemics of the newborn are preventable. Of the suggestions which Dr. Spivek makes, there are objections to several. If nurseries of three or four beds are closely associated with maternal beds, and if the same nursing force takes care of mothers and children, there is a possibility of carrying infection from lochia to baby. Concerning individual units, one hospital in San Francisco is actually set up to house each child in the same room or a room adjacent to the mother. This requires a special nurse for each, mother and child, and increases the expense. If the conclusion is reached that the hospital nursery is, after all, the most practical solution, one must emphasize the essential factors in good routine, which, as Dr. Spivek points out, must be based on completely equipped and separately run baby cubicles. I want to say something about the experiences we had in Mount Zion Hospital, San Francisco, covering a period of six years. The details have been demonstrated in the exhibit. The most important aspect of the routine has been the development of a truly cooperative spirit, in addition to a rigid technic, a spirit which unites house staff, nurses and physicians and which is carried out in such a friendly way that parents and relatives gladly share in the protection of their own baby as well as all others. Isolated cases of impetigo may occur under the best routine, but I think that an increased number of infected babies is always due to break in routine, and it is easily detectable. Critical evaluation of practices which have become conventional, such as Dr. Spivek has made in his paper, are very important. Only by such appraisal can practice be kept up with new experience.

DR. L. HOWARD SMITH, Portland, Ore.: As I understand Dr. Spivek's paper, he is not primarily interested in the prevention of the cutaneous infections of the newborn but epidemic diarrhea of the newborn. To see one of these infants literally wither before one's eyes is terrifying. Dr. Spivek is presenting a method to stop the spread of fatal diarrhea of the newborn. Until more concerning its etiology is known, there will be difficulty in stopping its entrance into the nursery. Once it has arrived, good nursing technic has not stopped its spread to other babies. Dr. Spivek speaks of the normal flow of traffic

in the nursery for newborn infants. This traffic has been lessened by the method of not bathing and nonoiling the newborn. The time spent each day by the nurse hovering over the baby is greatly lessened. In the average charity hospital or county hospital, where the infant population varies from eighteen to fifty a day, suggestions 1, 2 and 3 are hardly practical, but hospital delivery and discharge within two to three days would seem highly desirable. This practice has been carried out in certain hospitals with excellent results. Of course, the ultimate of dispersion is home delivery, but I cannot picture an obstetrician with a trailer hitched to his car carrying delivery equipment going out to deliver a baby in the home. Dr. Spivek deserves a medal from the Section on Pediatrics for suggesting such a practical method.

DR. MAURICE L. BLATT, Chicago, Ill.: Dr. Spivek's subject is most timely in view of the fact that epidemics of sepsis have invaded the nurseries for the newborn of institutions from New York to the Pacific. San Francisco apparently has been fortunate in not having had a serious epidemic in any of its nurseries. The problem as presented by Dr. Spivek is a result of our type of civilization. The assembling of large groups of people in a single hospital endangers each by intimate contact with carriers or individuals with disease. To disassemble such a civilization is difficult and it is this which Dr. Spivek suggests. I do not believe that advance can be made along the lines so suggested. I believe it is up to us as scientists, as pediatricians, as research workers, to determine a more effective method of prevention of sepsis in the newborn in nurseries in large communities. Nurseries will continue to be large because in no other way can we finance the care of the large number of indigent and semi-indigent patients thrust upon us.

DR. M. K. WYLER, Albuquerque, N. M.: I come from a state where 40 per cent of the population live long distances from a doctor, where about 30 per cent of our women are delivered not even by a physician, and over 50 per cent of the women in our state are delivered in the homes. I see a great many of these babies that are delivered by a dirty Mexican midwife who washes her hands after the delivery instead of before it. However, in cases in which delivery is done on a sheep pelt laid under the woman in the bed, impetigo and septic infections do not result. While I don't think any of us want to go back to home delivery, impetigo and septic infections in the newborn in the home delivery aren't seen by us. This, then, is purely a problem for the hospital. As Dr. Arthur Abt told the round table at Delmonte the other day, if the hospitals don't solve these problems, the deliveries will go back to the home again. I believe the hospitals will solve them.

DR. IRVING J. WOLMAN, Philadelphia: I think all pediatricians who are familiar with the problems of the nursery would agree with Dr. Spivek whole-heartedly. One big problem, of course, lies in the etiology of these gastrointestinal infections which are now making their appearance all over the country. We younger men wonder whether these epidemics are new things or whether they have been going on for years without being reported in the literature. Most hospital routines are based on the assumption that the infective agents spread by direct contact and fomites. A most important but hitherto neglected approach lies in the prevention of air borne infections by the newer methods of air hygiene. It is questionable whether restricting the number of infants in any one nursery to two or four is sufficient. It would be better to isolate each individually. There are some new developments in the form of air conditioned cubicles within which infants are completely protected and isolated from the outside world. Dr. Chapple of Philadelphia presented a description of one such chamber before the American Pediatric Society last month. His rigid isolation technic includes the breathing of air from outdoors where the bacterial count is very low. The addition of atmospheric sterilization to the nursery armamentarium may prove of service in the control of nursery epidemics.

DR. MANDEL S. SPIVEK, Chicago: This paper is a theoretical one, a paper which was gotten up at a desk. It has nothing to do with research or with a reading of literature. It is my own appraisal of what goes on in the nursery. Dr. Wolff has

a wonderful setup at the hospital with which he is associated, in which one of the most important things is the *esprit de corps*. That is, every one is aware of the technic, every one is conscious of it. There are very few hospitals that have that mutual understanding. Under those conditions, the spread of infection is difficult. Whether we can go back to home delivery or not, I do not know. It took a lot of educating and a lot of pushing to get the mothers from the home into the hospital. It will take the same education and the same push to get them back to their homes for delivery. It is merely a matter of education. It should not be difficult; I don't see any reason why we can't. Dr. Wolman spoke of air borne infection. We really do not know whether it is air borne or not or whether it is a virus disease or not. Various organisms have been reported, and in a thorough search for the virus in the Chicago epidemic nothing was found.

## SODIUM DIPHENYL HYDANTOINATE IN THE TREATMENT OF CON- VULSIVE DISORDERS

H. HOUSTON MERRITT, M.D.

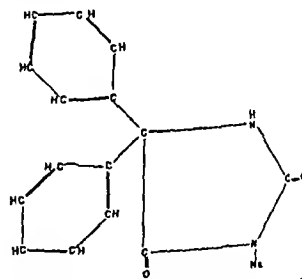
AND

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Good results in the treatment of patients with convulsive seizures have been obtained by a variety of methods, such as medical treatment with bromides or barbituric acid compounds, the ketogenic diet, restriction of fluids, and the surgical excision of scars or irritable cortical foci. In spite of these various therapeutic means there are a great number of patients who are not relieved of their attacks or are helped only temporarily by treatment. The fact that treatment by anticonvulsant drugs is at present the most widely used

and on the whole the most effective method of therapy suggested to us the possibility that a direct and systematic experimental search might reveal more potent and less sedative compounds. With this idea in mind we devised an experimental procedure<sup>1</sup> which would produce convulsive



Chemical structure of sodium diphenyl hydantoinate.

seizures in animals at a constant threshold and which would allow for a qualitative and roughly quantitative determination of the relative effectiveness of various drugs. By this method a large number of chemicals and drugs, selected on theoretic grounds, were studied, and it was found<sup>2</sup> that several heretofore unused chemicals were as effective in protecting animals from the electrically induced convulsions as the drugs commonly used in the treatment of patients with convulsions (bromides, phenobarbital and the like) or even more effective.

Under the auspices of the Harvard Epilepsy Commission. This study was aided by a grant from Parke, Davis & Co., Detroit. From the Neurological Unit, Boston City Hospital, and the Department of Neurology, Harvard Medical School.

Read before the Section on Nervous and Mental Diseases at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 17, 1938.

1. Putnam, T. J., and Merritt, H. H.: Experimental Determination of the Anticonvulsant Properties of Some Phenyl Derivatives, *Science* 85: 525-526 (May 28) 1937.

2. Merritt, H. H.; Putnam, T. J., and Schwab, D. H.: A New Series of Anticonvulsant Drugs Tested by Experiments on Animals, *Arch. Neurol. & Psychiat.* 39: 1003 (May) 1938.

One of these chemicals, sodium diphenyl hydantoinate, which was especially effective in protecting animals from electrically induced convulsive seizures with little sedative effect, was subjected to extensive pharmacologic and toxicologic tests by Krayner and by Kamm and Gruzhit.<sup>3</sup> The results of these tests showed that it was well tolerated by the ordinary laboratory animals (cats, dogs, rats) in massive single and long-continued daily doses. It was therefore considered safe to make a trial study of the drug in patients suffering from repeated convulsive seizures.

Sodium diphenyl hydantoinate is somewhat analogous in structure to the barbiturates, being a derivative of glycolyl urea rather than of malonyl urea. It is an odorless white powder with a bitter taste; it is soluble in water, slightly soluble in alcohol and insoluble in benzene and ether. The aqueous solution is alkaline to litmus and shows a  $p_H$  of 11.7.

In order to determine the relative effectiveness of this drug on convulsive disorders in human beings, a group of patients was selected who had been having frequent convulsive seizures for many years and who had obtained little or no benefit from the usually accepted treatment, i. e. bromides, phenobarbital, ketogenic diet, restricted fluid intake and the like. The vast majority of these patients would be classified as having severe epilepsy.

CLINICAL RESULTS

At the time of the preparation of this report, the medicine has been administered to 200 patients for a period varying from three weeks to eleven months. The results reported in this study are those in 142 patients with frequent attacks who have received the treatment for a period greater than two months, varying from extremes of eleven and two months, with an average of 4.3 months.

*In Patients with "Grand Mal" Seizures.*—Of the 118 patients with frequent grand mal attacks, complete relief of attacks has been secured in sixty-eight (58 per cent) and a marked reduction in the number of attacks in an additional thirty-two (27 per cent). In eighteen (15 per cent) there was only a moderate degree of improvement or no improvement over the previous status with bromides or phenobarbital therapy.

The results are shown in table 1 and two illustrative case histories are given here:

CASE 1.—B. H., highschool boy aged 15, white, with a history of one grand mal attack in infancy, began at the age of 11 years to have mild grand mal attacks with loss of consciousness for from two to four minutes. These attacks occurred three or four times a week for the first year and neither their frequency nor their severity were reduced by treatment with bromides or phenobarbital. At the age of 12 there was a spontaneous remission for one year. The attacks recurred at the age of 13 at daily intervals and were not influenced by phenobarbital or methyl ethyl phenobarbital (mebaral). The physical and mental development was normal and the neurologic examination gave negative results; the blood, urine and cerebrospinal fluid were normal. Roentgenograms of the skull were negative. Electro-encephalography showed evidences of abnormal cortical activity, with frequent short bursts of abnormal waves of the grand mal and psychomotor types described by Gibbs and Lennox.<sup>4</sup>

Treatment was started Sept. 15, 1937, with 0.1 Gm. of sodium diphenyl hydantoinate three times a day. There was complete freedom from attacks until May 1, 1938, when attend-

ing a dance while visiting friends he forgot to take his medicine and had two grand mal attacks in bed the next day.

Examinations of the blood and urine on several occasions since the start of treatment have shown no abnormalities.

CASE 2.—A. W., a white man, aged 26, suffered from severe grand mal attacks of five years' duration, occurring almost daily with an increase in frequency to two or three attacks daily during the month before entry to the hospital, although the patient was receiving 6 grains (0.4 Gm.) of phenobarbital daily. Examination was negative except for bilateral middle ear deafness and mental deterioration (mental age 9). The blood, urine and spinal fluid were normal. Roentgenograms of the skull were negative. Electro-encephalography showed frequent bursts of abnormal cortical activity of the grand mal type.<sup>4</sup>

Treatment was started Dec. 2, 1937, with 0.1 Gm. of sodium diphenyl hydantoinate three times a day. The patient has been entirely free of attacks since starting treatment.

*In Patients with "Petit Mal" Seizures.*—In seventy-four patients with frequent petit mal attacks, complete relief was obtained in twenty-six (35 per cent) and a marked reduction in the number of attacks in thirty-six (49 per cent). In twelve (16 per cent) there was only slight or no improvement over the status under

TABLE 1.—Effect of Sodium Diphenyl Hydantoinate on Grand Mal Convulsive Seizures in 118 Patients with Frequent Attacks Who Have Been Treated for a Period Greater Than Two Months

Frequency of Attacks	Grand Mal Alone	Grand Mal Associated with		Total	Per Cent
		Petit Mal	Equivalents		
Completely relieved.....	29	35	4	68	58
Greatly decreased.....	14	17	1	32	27
Moderately decreased.....	6	0	0	6	5
No change.....	10	2	0	12	10
Total.....	59	54	5	118	100

previous forms of therapy. It will be noted from a study of table 2 that the percentage of relief or great reduction in the petit mal attacks was highest in the patients in whom the petit mal attacks were associated with those of the grand mal type. Two illustrative histories are given here:

CASE 3.—D. R., a graduate nurse, aged 22, began to have petit mal attacks two and one-half years before examination. These were characterized by blinking of the eyes and a momentary lapse of consciousness without falling. Attacks occurred from one to three times a day.

The physical and neurologic examinations were negative and the blood, urine and spinal fluid were normal. Roentgenograms of the skull were negative. Electro-encephalograms showed disturbance of the cortical activity typical of petit mal.<sup>4</sup>

Treatment was started Oct. 22, 1937, 0.1 Gm. of sodium diphenyl hydantoinate being administered three times a day, with complete relief of attacks. The patient has attempted to go without the medicine on several occasions since with return of attacks.

CASE 4.—H. D., a white youth, aged 19, had been suffering for the past ten years with nocturnal grand mal attacks occurring two or three times a month and petit mal attacks several times a day. Previous treatment with phenobarbital (3 grains [0.2 Gm.] daily) had not reduced the frequency or severity of the attacks. The physical and neurologic examinations were negative. Examination of the blood, urine and spinal fluid was negative.

Treatment with sodium diphenyl hydantoinate 0.2 Gm. at bedtime was started Dec. 10, 1937. Since this date there has been complete relief from the petit mal attacks, but grand mal attacks occurred on December 17 and 28. The dosage

3. Personal communications to the authors.  
4. Gibbs, F. A.; Gibbs, E. L., and Lennox, W. G.: Cerebral Dysrhythmias of Epilepsy, Arch. Neurol. & Psychiat. 39:298 (Feb.) 1938.

of sodium diphenyl hydantoinate was increased to 0.4 Gm. daily on December 29. Grand mal attacks occurred on January 30 and March 20. The dosage was then increased to 0.6 Gm. daily with freedom from all attacks since March 20.

*In "Psychomotor Equivalent" Attacks.*—Of the six patients with psychomotor equivalent attacks there has been complete relief in four (67 per cent) and a very marked reduction in the frequency of attacks in two (33 per cent). The results are shown in table 3 and two illustrative cases are given here.

CASE 5.—S. B. R., a white man, aged 54, an insurance salesman, gave a history of attacks of five years' duration, occurring two or three times a day, characterized by a turning of the head to one side, chewing movements of the jaw, mental cloudiness and performance of automatic actions, such as taking off shoes. The patient would not fall but would be unable to answer questions or talk coherently for from thirty to ninety seconds.

The physical and neurologic examinations were negative. The blood, urine and spinal fluid were normal and roentgenograms of the skull were negative. Electro-encephalography showed evidences of abnormal cortical activity typical of those found in patients with psychomotor equivalents.<sup>4</sup>

Previous treatment had consisted of 9 grains (0.6 Gm.) of phenobarbital and 30 grains (2 Gm.) of sodium bromide daily, plus calcium gluconate, with no effect on the severity or frequency of the attacks. The patient was started on treatment with sodium diphenyl hydantoinate Aug. 8, 1937, in doses of from 0.4 to 0.6 Gm. a day. The frequency of attacks has decreased from two or three attacks daily to an average of three attacks a month.

CASE 6.—S. H. R., a man aged 55, an unemployed salesman, had attacks which started at the age of 15 with a transient feeling of nausea and blinking of the eyes. These occurred at irregular intervals for seven years. At the age of 22 he had grand mal attacks at night for a period of eight years, after which the grand mal attacks ceased and the petit mal attacks passed over into psychic equivalents. In these attacks he would perform automatic movements and talk and answer questions, but he would not remember what had happened afterward. These attacks occurred from three to five times a week. An attack would last from one and one-half to three minutes, followed by a period of mental cloudiness for from five to ten minutes.

TABLE 2.—*Effect of Sodium Diphenyl Hydantoinate on Petit Mal Convulsive Seizures in Seventy-Four Patients with Frequent Attacks Who Have Been Treated for a Period Greater Than Two Months*

Frequency of Attacks	Petit Mal Alone	Petit Mal Associated with Grand Mal	Total	Per Cent
Completely relieved.....	6	20	26	35
Greatly decreased.....	7	29	36	49
Moderately decreased.....	1	2	3	4
No change.....	6	3	9	12
Total.....	20	54	74	100

General physical and neurologic examinations were negative. Electro-encephalography showed evidences of abnormal cortical activity. Previous treatment had been from 1½ to 3 grains (0.1 to 0.2 Gm.) of phenobarbital a day.

The patient was started on treatment March 18, 1938, with 0.4 Gm. of sodium diphenyl hydantoinate a day. There was complete relief from attacks until April 3, when the patient complained of extreme nervousness and shaking of the hands. The dose of medicine was decreased to 0.2 Gm. daily on April 3 with relief of the nervousness but with return of attacks. April 14 the dose was increased to 0.3 Gm. a day with complete relief of attacks since but with the occurrence of anorexia and a feeling of nausea without vomiting. This has

been relieved by taking the medicine with his meals. Examinations of blood and urine since treatment was started have shown no abnormality.

#### DOSAGE

The dose used for adults varied between 0.2 and 0.6 Gm. a day, depending on the therapeutic effect and toxic reactions. As a rule adult patients were started on a dose of 0.1 Gm. three times a day, increased up to a maximum of 0.2 Gm. three times a day if therapeutic effects were not obtained. Small children were started on 0.1 Gm. twice a day, increased up to 0.4 or 0.5 Gm. daily until the optimum therapeutic dosage

TABLE 3.—*Effect of Sodium Diphenyl Hydantoinate on Psychic Equivalent Seizures in Six Patients with Frequent Attacks Who Have Been Treated for a Period Greater Than Two Months*

Frequency of Attacks	Psychic Equivalents Alone	Psychic Equivalents Associated with Grand Mal	Total	Per Cent
Completely relieved.....	0	4	4	67
Greatly decreased.....	1	1	2	33
Total.....	1	5	6	100

was determined. For convenience the medicine was usually administered at meal time. It was found that gastric symptoms were avoided by the few patients in whom they occurred by taking the medicine along with or after the meal rather than before it. The dose in the seventy-two patients who were relieved of their attacks varied from 0.2 to 0.6 Gm. with an average of 3.6 Gm. Relief was obtained on a dose of 0.3 Gm. a day by forty-two patients. In contrast, the average dose for the forty-five patients in whom the attacks were greatly decreased in frequency was 4.3 Gm. and for the unimproved group the average dose was 4.6 Gm. Although 0.6 Gm. was considered to be the maximum therapeutic dose, the average dose in the group of cases in which treatment was not effective was only 0.46 Gm. This is explained by the fact that many of the patients in the latter group were not able to take larger doses owing to the appearance of minor toxic symptoms, such as tremors, ataxia, diplopia or dizziness.

#### TOXIC REACTIONS

The toxic reactions can be divided into two groups:

1. Minor toxic symptoms such as dizziness, ataxia, tremors, blurring of vision, diplopia and slight nausea. This type of reaction occurred in approximately 15 per cent of the patients. They tended to occur between the third and the tenth day of treatment and could be relieved by reducing the dosage. If the reduced dosage was not effective in controlling the seizure, it could in most instances be increased after a few days without the return of symptoms. In a few cases the dose could not be maintained at the optimum level of effectiveness on account of the appearance of these symptoms whenever attempts were made to increase the daily dose to more than 0.4 Gm.

2. More serious toxic reactions in the nature of dermatitis and purpura. Dermatitis occurred in ten cases (5 per cent) but in only one instance was the dermatitis considered to be of a serious nature. This was in a man, aged 55, in whom an exfoliative dermatitis developed forty days after he started the treatment.



The medication was immediately discontinued and the dermatitis gradually cleared. A brief abstract of his record is given:

CASE 7.—C. E., a man, aged 55, unmarried, a postoffice employee, was seen in 1933 with a history of grand mal convulsive seizures two or three times a month for two years. Complete physical and neurologic examinations at that time, including roentgenograms of the skull and examination of the spinal fluid, were negative except for a moderate degree of hypertension; the blood pressure was 140 systolic, 106 diastolic. He was discharged to his local physician and treated with phenobarbital and bromides with a temporary decrease in the frequency of the attacks, but they gradually recurred with their former frequency. Sodium diphenyl hydantoinate in a dose of 0.1 Gm. three times a day was started March 7, 1938. The patient's blood pressure at this time was 205 systolic, 130 diastolic. A convulsion occurred March 21 and the dose was increased to 0.1 Gm. four times a day. April 15 a morbilliform rash appeared on the face, trunk and extremities and developed into a brawny red maculopapular rash. There was no fever and, with the exception of a mild degree of itching sensation in the skin, the patient had no symptoms. He was admitted to the hospital, where he remained for approximately three weeks. The rash gradually cleared up, white wash being used to relieve the itching. In the hospital, examinations of the blood and urine were negative. The kidney function test showed a phenolphthalein excretion of 55 per cent in two hours. With the withdrawal of sodium diphenyl hydantoinate there was immediate return of convulsive seizures. These were controlled with large doses (6 grains [0.4 Gm.] a day) of phenobarbital.

In the remaining nine cases the cutaneous reactions were of erythematous, scarlatiniform or morbilliform nature. This type of reaction usually occurred on the ninth to the tenth day of treatment and was frequently accompanied by fever. The rash disappeared in all patients regardless of whether the treatment was discontinued. In seven of the nine patients the treatment was interrupted by us as soon as a rash was reported. Two patients failed to report the rash and continued to take the medicine throughout the period of duration of the rash. Five of the seven patients in whom the use of the medicine was discontinued during the period of the rash were put back on the treatment after a few days, since the medication had been effective in relieving the attacks. Treatment was discontinued in the two patients who had not been relieved of the attacks. In another patient treatment has not been resumed, although it had been effective, since we desired to observe the patient in the hospital when further treatment was instituted.

Two examples of cutaneous reactions are given:

CASE 8.—G. G., a high school girl aged 13, began to have petit and grand mal attacks at the age of 2½ years. The petit mal attacks occurred several times a day and the grand mal attacks every three or four days. Previous treatment with the ketogenic diet, bromides and phenobarbital were ineffective. The physical and mental development was normal. Physical examination and examinations of the blood, urine and spinal fluid were negative. Roentgenograms of the skull were negative. Treatment with sodium diphenyl hydantoinate 0.1 Gm. three times a day was started Jan. 28, 1938. February 7 (ten days after treatment was started) a generalized scarlatiniform rash appeared accompanied by a fever of 102 F. The treatment was discontinued and the rash and fever disappeared in four days. Treatment was reinstituted four days after the disappearance of the rash in a dose of 0.2 Gm. daily. Grand mal attacks occurred on February 18 and 19. The dosage was increased to 0.3 Gm. daily with no attacks until March 10. On a dosage of 0.4 Gm. a day the patient has been free of attacks since March 10. The blood and urine on several occasions since treatment was started have been normal.

CASE 9.—M. P., a white boy aged 13 years, had had left jacksonian convulsive attacks since the age of 1 year. The third attack at the age of 3 was followed by a left hemiplegia, which has persisted. The frequency of the attacks gradually increased and for the past few years they occurred on the average of five or six times a day. An attack was characterized by convulsive movements of the left arm and leg, lasting from thirty seconds to five minutes without loss of consciousness. Previous treatment had consisted of large doses of phenobarbital, bromides and "donhide," a proprietary preparation containing bromides and extract of scutellaria, without any appreciable effect on the frequency or severity of the attacks. On examination there was a spastic left hemiparesis and a moderate degree of mental retardation.

Treatment with sodium diphenyl hydantoinate 0.1 Gm. three times a day was started Jan. 24, 1938. After five days of treatment there was no change in the frequency of attacks and the dose was increased to 0.5 Gm. daily with complete relief from the attacks. February 2, nine days after the institution of treatment, the patient complained of itching of the legs and hands, and a faint scarlatiniform rash developed over the face and extremities. Treatment was discontinued and there was a prompt return of the attacks. The rash and fever disappeared by February 7 and the sodium diphenyl hydantoinate was started again in doses of 0.1 Gm. daily. This was increased to 0.3 Gm. February 17, and since then attacks have been very mild and very infrequent, permitting the boy to attend school. Frequent examinations of the blood and urine since the treatment was started have shown nothing abnormal.

In one case purpuric lesions developed on the buttocks approximately two months after the treatment was started. The patient had been relieved of his attacks. Since there were no constitutional symptoms and a thorough study of the blood was negative, and since the lesions were beginning to clear before the patient reported them, treatment was not interrupted. A brief abstract of this case is given here:

CASE 10.—K. C., a white man, aged 35, a machinist, had had convulsive seizures three years before entry to the hospital. These occurred occasionally in the day time but were more frequent at night, occurring from seven to eight times each night. They were characterized by an aura of belching and choking sensation and the occurrence of slight convulsive movements of the arm and invariable incontinence of urine. The attacks would last for from thirty to ninety seconds. In addition, the patient had had five grand mal seizures. General physical and neurologic examinations were negative. Studies of the blood and urine were negative and roentgenograms of the skull were negative. Electro-encephalograms showed abnormal waves of the grand mal and psychomotor types.<sup>4</sup> The patient was started on treatment Dec. 7, 1937. For the first three weeks of treatment there was no decrease in the frequency of the attacks, but the urinary incontinence which had previously accompanied the attacks disappeared. After this there was a gradual decrease in the frequency of the attacks so that by the second month of treatment they occurred only two or three times a week and by the tenth week they had disappeared entirely. February 15, approximately eleven weeks after the treatment was started, the patient had some teeth extracted under procaine hydrochloride anesthesia. February 19, large ecchymotic lesions were noticed on the buttocks by the patient's wife. Since the attacks had ceased the patient had discontinued the medicine February 18, but when they began to recur on February 22 he resumed the use of the medicine. The presence of the lesions was not reported to us until March 7, as the patient had attached no significance to them. At that time they were large brownish areas on both buttocks. The hemoglobin content of his blood was 88 per cent, red blood cell count 4,800,000 and white blood cell count 14,200, with 78 per cent polymorphonuclears, 19 per cent small lymphocytes, 2 per cent large lymphocytes, 1 per cent eosinophils. The red blood cells and platelets appeared normal in smear and the platelet count was 322,000 per cubic millimeter. The bleeding time was one and one-half minutes and the tourniquet test was negative. The blood was reexamined care-

fully ten days later with no change in the red blood count or hemoglobin content. The white blood count was 10,000 with differential count as before; the platelet count was 337,000; bleeding time two minutes, icteric index 5. The patient has been continued on treatment since with no return of attacks. There have been no new lesions, and the lesions on the buttocks have gradually faded. Frequent examinations of the blood and urine have shown no abnormality.

## COMMENT

The results here reported indicate that sodium diphenyl hydantoinate was effective in controlling convulsive seizures in a great majority of a selected group of patients who were not helped by other methods of therapy. It is natural to assume, therefore, that even more satisfactory results could be obtained in patients with a less severe tendency to convulsions.

It must be noted that with a few exceptions the duration of treatment in the majority of the cases was less than six months. It is probable, therefore, that many of the patients in the "completely relieved" group will later be transferred to the other groups, but it is also possible that greater experience with the use of the drug will make it possible to obtain better results in some of the cases in the moderately or greatly improved groups. Whether or not some of the patients will ultimately become refractory to this treatment, as has occurred with other forms of therapy, remains to be seen.

In addition to a relief or a great reduction in the frequency of the attacks, it was frequently noted by the parents of children that they were much better behaved, more amenable to discipline and did better work in school. This improvement must have been due in great part to the freedom from attacks, but it is also possible that the medication produced other changes in the activity of the cerebral cortex. Studies of the cortical activity by means of the electro-encephalogram before and after treatment with sodium diphenyl hydantoinate are being conducted in collaboration with Dr. F. A. Gibbs and will be reported at a later date. The results of this study may conceivably lead to the use of the drug in conditions other than the convulsive state associated with similar cortical dysrhythmias.<sup>4</sup>

Sodium diphenyl hydantoinate has been shown to be a relatively nontoxic drug when given in doses of from 0.2 to 0.6 Gm. a day. There were no fatalities in a group of 200 patients and in only two patients was there a reaction that could be considered as serious in nature—an exfoliative dermatitis in one patient and a nonthrombocytopenic purpura in the second. Frequent studies of the blood and urine failed to reveal any evidence of damage to the hemopoietic system or kidneys in any of the 200 patients. The toxic dermatitis produced by the drug, with the one exception already noted, was of a benign nature and was quite similar to that produced by another hydantoin compound, phenylethyl hydantoin (nirvanol), which was formerly used in the treatment of chorea minor. Sodium diphenyl hydantoinate is without doubt, however, considerably more toxic than bromides and the barbituric acid compounds. Cutaneous reactions as well as the minor toxic symptoms of tremors, ataxia, diplopia, dizziness and the like are much more frequently encountered. The high degree of alkalinity of the drug sometimes causes a sensation of nausea and discomfort in the abdomen, making it difficult for some patients to take it regularly. It is possible also that a more extensive use of the drug will result in other toxic reactions which we have not

as yet encountered in our 200 patients. In spite of these handicaps we feel that sodium diphenyl hydantoinate is a valuable addition to the medical armamentarium in the battle against epilepsy and that it is worth trying with proper precautions in patients who have not responded to the less toxic modes of therapy, such as the bromides, the barbituric acid compounds or the ketogenic diet.

The optimum dosage of the drug must be determined by trial. Children above the age of 6 and adults should be started on a dose of 0.1 Gm. three times a day. Gastric discomfort and nausea can usually be prevented by giving the capsule with or immediately following the meals. If seizures are not controlled by the end of from seven to ten days an additional dose should be given at bedtime. Further increase in the dose, up to a maximum of 0.6 Gm. a day, can be adjusted according to the tolerance of the patient. Infants and children up to the age of 5 years should be started on a dose of from 0.1 to 0.2 Gm. a day, which can be gradually increased to 0.3 to 0.4 Gm. a day if necessary.

The appearance of minor toxic symptoms, such as nervousness, tremors or ataxia, calls for a reduction in the size of the dose. If the reduced dose is ineffective, attempts can be made after from five to ten days to increase it. The use of the drug should be immediately discontinued if more serious toxic symptoms, dermatitis, purpura and the like develop. An exfoliative dermatitis makes further use of the drug absolutely contraindicated. A mild erythematous, morbilliform or scarlatiniform reaction occurring on the eighth to the eleventh day of treatment is not of such serious import, and, if there are definite indications that the drug has been effective in relieving severe attacks, it can be given again in small doses with caution. If no untoward symptoms develop, the dose can be increased gradually every four to six days. On the reappearance of any toxic manifestation, further use of the drug is prohibited.

If patients have been receiving large doses of bromides or phenobarbital, these should be continued along with the sodium diphenyl hydantoinate, the dose of the bromides or phenobarbital being gradually decreased over a period of from four to seven days. This is advisable since the sudden withdrawal of the bromides or phenobarbital may result in the precipitation of a series of attacks before a reservoir of sodium diphenyl hydantoinate has been built up.

Our experience with the drug has not been sufficient to determine all the contraindications for its use. At present we feel that it should not be given to elderly persons with hypertension or other evidences of cardiovascular disease, or to debilitated patients.

## SUMMARY

1. In a previous study it has been shown that sodium diphenyl hydantoinate is effective in preventing electrically induced convulsive seizures in cats. The drug is relatively nontoxic and well tolerated by the usual laboratory animals.

2. A clinical trial of sodium diphenyl hydantoinate was made in 200 patients with frequent convulsive seizures which had not been relieved by the previous modes of therapy.

3. In 142 such patients who have received the treatment for periods varying from two to eleven months, grand mal attacks were relieved in 58 per cent and greatly decreased in frequency in an additional 27 per

cent; petit mal attacks were relieved in 35 per cent and greatly decreased in frequency in an additional 49 per cent, and psychic equivalent attacks were relieved in 67 per cent and greatly decreased in frequency in 33 per cent.

4. There were no fatalities. A toxic dermatitis occurred in ten patients (5 per cent), nonthrombocytopenic purpura in one patient and minor (in many instances, transient) toxic reactions, tremors, ataxia, dizziness and the like in approximately 15 per cent.

#### CONCLUSIONS

Sodium diphenyl hydantoinate is a valuable addition to the physician's armamentarium in the battle against "epilepsy." Its use should be restricted, for the present, to that group of patients who do not respond to the less toxic forms of therapy previously in common use.

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#### ABSTRACT OF DISCUSSION

DR. EUGENE ZISKIND, Los Angeles: The discovery of this drug is an indication of the mental alertness of these authors, which has been shown in much of their previous experimental work. The discovery is based on attention to a clinical observation with which some physicians may not be acquainted. Drs. Merritt and Putnam observed that whereas phenobarbital controls seizures in a high proportion of cases that is not true of other barbiturates, and so, concentrating on the phenol fraction of the phenobarbital, their investigation led to the trial with these various drugs which showed so definite an effect on the convulsive seizures. In epilepsy, therapy of this type is essential for long periods, often many years. I would be interested in seeing what the incidence of complication is when this drug is used for longer periods. The statistical results so far reported are far in excess of what one would expect as a chance of variation. Dr. Somerfeld and I had occasion to observe that phenobarbital markedly increased the extrapyramidal rigidity in cases of parkinsonism, and we shall be stimulated by this study to investigate also whether or not the response there has been from barbiturates or by the phenol elements. We are also looking forward to an opportunity to use this drug, which appears to be a notable advance in the therapy of convulsive disorders.

DR. T. J. PUTNAM, Boston: The results of the use of this drug, as reported by the authors and by Dr. Shurly from Dr. Kimball's clinic, speak for themselves. I should like to emphasize in relation to this project, however, not alone the efficacy of this drug but the fact that, it seems, a new method of studying modes of therapy of convulsions has become available. There probably are several kinds of convulsions. Perhaps there should be several types of medication to control them. This is only one drug found through a preliminary experimental survey. There is reason to believe there are perhaps many others and maybe more effective ones still to be found.

**The Health of Early English Queens.**—Henry VIII had studied pharmacy and often mixed medicines in his own laboratory as a pastime between his six love affairs; but his medical knowledge did not extend to obstetrics. His Queen Catherine in eight pregnancies had only one living child. Anne Boleyn had but one living child, the future queen Elizabeth, and two miscarriages. Jane Seymour died of fever soon after her son, Edward VI, was born. He died at the age of 16. Queen Mary, Catherine's daughter, was more concerned with her own health and the combating of heresy than the health of her people. Queen Elizabeth, who had been sickly from her eleventh year, had to submit to so many bleedings and purgings that it is a wonder that she lived to reign at all. Elizabeth was, perhaps, the most thoroughly educated woman of her age. She spoke several languages and wrote Latin and Greek easily. She had dabbled in medicine.—Hurd-Mead, Kate Campbell: *A History of Women in Medicine*, Haddam, Conn., the Haddam Press, 1938.

## RECENT RESEARCHES IN NUTRITION IN RELATION TO PREVENTIVE MEDICINE

NINA SIMMONDS, Sc.D.

SAN FRANCISCO

Hippocrates is reported to have stated that "there are many other ills different from those of repletion but no less dreadful arising from deficiency of diet." The history of medicine contains many references to observations which supported the theory that there is a relationship between diet and certain diseases such as beriberi, scurvy, night blindness, osteomalacia and rickets, known by various terms in different languages.

With the advent of bacteriology and its brilliant discoveries, however, the idea that disease can be brought about by lack of something in the diet was difficult to comprehend, especially in the light of the many diseases which were shown to be of bacterial origin. It was not until the fundamentals of an adequate diet were demonstrated by means of animal experiments that a relationship between faulty diet and the so-called deficiency diseases could be demonstrated. Pernicious anemia, diabetes and goiter will not be discussed in this paper.

With the possible exception of pellagra, clearcut clinically defined disease entities of dietary origin have not played a large part in mortality and morbidity statistics, so in the past the attention of public health officials and physicians interested in preventive medicine has not been focused on the role of nutrition in the public health program. However, it is now recognized by many physicians, nurses, nutritionists and others interested in the public welfare that malnutrition and borderline deficiency diseases are not uncommon in the low income groups and also among persons with sufficient incomes but with faulty food habits. Malnutrition has been spoken of as "the great disease of the American school child."

There is an interesting history of nutrition which laid the foundation for much of the recent work, but, fundamental as were the studies of the early investigators on the mineral, energy and protein needs of the body, it was not until about 1925 that there existed a practical working knowledge of the subject. The development of the newer knowledge of nutrition may be said to have begun about the end of 1915. From about 1912 on the vitamin hypothesis was in the air. It was inevitable that soon some of the various investigators working in the fields of biochemistry and nutrition would formulate on the basis of definite experimental evidence a working hypothesis concerning the essentials of an adequate diet. McCollum and Davis<sup>1</sup> did this in 1915. They stated that "in addition to the well recognized dietary factors, two as yet unidentified dietary essentials are necessary in the diet."

Many important papers published between 1915 and 1938 elaborated on this hypothesis. It is apparent to every one interested in medicine and related fields that more progress has been made in the science of nutrition since 1915 than in all time previous. Without question this has been due to the demonstration of the existence

From the Medical Center, University of California.  
Read before the Section on Preventive and Industrial Medicine and Public Health at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 16, 1938.  
1. McCollum, E. V., and Davis, Marguerite: The Essential Factors in the Diet During Growth. *J. Biol. Chem.* 23: 231 (Nov.) 1915.

of the vitamins. The excellent series of articles on these factors appearing in the current issues of *THE JOURNAL* present data far beyond the fondest dreams of the biochemists of twenty-five years ago.

But what is the practical application of this research to preventive medicine and to public health? Dr. James M. Gamble<sup>2</sup> of Harvard Medical School expressed one example of a practical application when he said:

This splendid significance of the results of recent studies on rickets is not in the least subtracted from by admitting that the knowledge thus gained is not new knowledge. That cod liver oil would cure rickets has been known for several hundreds of years. This discovery is credited to fisher folk of northern Europe. That sunlight is preventive was convincingly evident to students of rickets generations ago. In recent times, however, the introduction into medicine of a commendably cautious reliance only on demonstrable data has produced perhaps a too inclusive disrespect for the older empirically established beliefs. A splendid clearance of rubbish has been accomplished, but, inevitably, grains of gold have been lost with the dross. To an even mildly critical attitude of mind the belief that oil from the liver of cod fish is specifically curative of a human ailment was obviously a quaint bit of archaic medical lore. The theory of a relationship of sunlight to prevention seemed an interesting but intangible surmise. The scientific method of thinking having produced skepticism, it was quite necessary that the rickets-preventive action of cod liver oil and of sunlight be rediscovered in irreproachably scientific terms. That this has been most beautifully done ensures a permanent and active belief in the efficacy of these agencies. And since their employment is so easily practicable we may now regard rickets as a preventable and unnecessary disease.

Another example in point: Over twenty years ago Dr. Joseph Goldberger<sup>3</sup> of the United States Public Health Service and Dr. Beverly R. Tucker<sup>4</sup> of Richmond, Va., were among the investigators who stressed the importance of an adequate diet in the treatment and prevention of pellagra. At that time, however, the vitamin content of the foods they recommended, such as meats, eggs, milk, legumes, fruits and vegetables, were not known as they are today; the language of nutrition was for the most part proteins, fats, carbohydrates, minerals, water and calories. The vitamin hypothesis was in its infancy not only in regard to the vitamin content of foods but also in relation to certain diseases. About 1913 Dr. Casimir Funk advanced the vitamin hypothesis to account for the occurrence of pellagra, beriberi, scurvy and rickets, but at that time neither the medical nor the nutritional aspects of these diseases were sufficiently advanced to make the vitamin hypothesis incontrovertible. However, as a result of research there is today at least a partial explanation of the "why" not only of the deficiency diseases but also of the part which faulty diet plays in their etiology, for there is a wealth of information on the dietary properties of foods. It is known why certain foods prevented scurvy in the past and will do so today; why pellagra did not and does not occur when milk, meats, eggs, fruits and vegetables are used in abundance; why cod liver oil and sunshine are rickets preventive. That persons may take an adequate diet and be unable to assimilate some of the factors is well known, of course, to physicians.

Furthermore, research in nutrition has made possible an analysis of racial and regional food habits. The soy bean curd of the Orient, the beans of Mexico, the poi of Hawaii, various foods of the Eskimo, including glandular organs, soft bones and blood, and the dairy products of other countries have much in common from the dietary standpoint. Human experience had demonstrated that no one food, with the exception of water, is or ever was indispensable in nutrition. Research has explained in part at least why. The following words of Dr. Woodruff<sup>5</sup> are pertinent: "In ultimate analysis everything is incomprehensible, and the whole object of science is simply to reduce the fundamental incomprehensibilities to the smallest possible number."

The prevention of malnutrition and deficiency diseases is not so simple as it would first appear. According to Burnet and Aykroyd,<sup>6</sup> "nutrition is an economic, agricultural, industrial and commercial problem as well as a problem in physiology." I should like to add that it is also an educational problem in which form, in the last analysis, it is probably the most difficult to handle. Beriberi still occurs in the Orient and elsewhere, pellagra is widespread, rickets is still present, a case of advanced scurvy and also of xerophthalmia occurs occasionally. Full-blown deficiency diseases are the spectacular phase of nutrition, but the prevention and also the early recognition of borderline states associated with malnutrition are of more importance from the standpoint of public health and preventive medicine. Cases of borderline deficiency are being reported with increasing frequency owing in part perhaps to better diagnosis. It is with the educational problem that the nutritionist and the public health nurse will have important roles. However, all persons adequately trained should assist with the educational program.

Owing in part to the fact that research not only has demonstrated the existence of vitamins but also has isolated and synthesized several of them, much of the world is extremely vitamin conscious at the present time. The various vitamins, dicalcium phosphate wafers and other calcium salts have been given a great deal of publicity, which has tended to focus too much attention on them. It should be emphasized that vitamin capsules, vitamin tablets and dicalcium phosphate wafers or other calcium salts are not panaceas for the solution of nutrition problems, valuable as they are or may be in supplementing certain diets. For example, the spectacular relief of the outstanding symptoms of pellagra by nicotinic acid or of scurvy by ascorbic acid does not solve the nutrition problems of patients with these diseases. Whenever possible, at least a brief nutrition history should be taken whether or not the patient shows symptoms of a deficiency disease, and if necessary the diet should be adjusted so that all dietary factors are abundantly supplied. Time, cost, convenience, likes and dislikes and habit are a few of the factors which must be taken into consideration when dietary suggestions are made. I<sup>7</sup> have outlined elsewhere the procedure for taking a nutrition history.

A review of the journals devoted to biochemistry, medicine and nutrition makes one question whether there is not too much of a tendency to discuss nutrition in terms of vitamins, essential amino acids, carotene,

2. Gamble, James M.: "No Child Need Have Rickets," in Stieglitz, Julius: *Chemistry in Medicine*, New York, Chemical Foundation, Inc., 1928, pp. 163-164.

3. Goldberger, Joseph: *The Cause and Prevention of Pellagra*, Pub. Health Rep. 29: 2821 (Sept. 11) 1914.

4. Tucker, B. R.: *Pellagra*, Internat. Clin. (series 26) 1: 64, 1916.

5. Woodruff, L. L.: *Foundations of Biology*, New York, Macmillan Company, 1922.

6. Burnet, E., and Aykroyd, W. R.: *Nutrition and Public Health*, Quart. Bull. Health Organ., League of Nations 4: 326 (June) 1935.

7. Simmonds, Nina: *The Dietary History and Its Value in Dental and Medical Practice*, Am. J. Digest. Dis. & Nutrition 4: 497 (Oct.) 1937.

thiamin chloride, ascorbic acid, nicotinic acid, dicalcium phosphate, calcium gluconate, units of various vitamins in foods and units of various vitamins needed daily by the individuals. In the light of the paucity of information available twenty-five years ago, one wonders whether so far as the practical aspects of nutrition are concerned the pendulum has not swung a little too far in the direction of meticulous attention to vitamins.

Data secured from animal feeding tests and color tests and then subjected to mathematical treatment have undoubtedly a certain value in estimating the units of vitamins needed daily, but because of sources of error, which are all too numerous, should not such data be considered of relative significance instead of being discussed with such a tone of accuracy and finality? I think so.

If nutrition is going to be an important factor in the public welfare it must be viewed with perspective, as are other problems in public health. The details of vitamin research, mineral metabolism and so on are of great interest to the sciences of medicine and nutrition, but in preventive medicine and public health one must deal largely with natural foods and products made from them. Research has provided not only a wealth of information on the dietary properties of foods but also data on what changes take place during the refining, the canning, the preparation, the cooking and the storage of many foods. This information is needed when one is judging the adequacy of a food supply.

In closing, then, it may be said that the practical application of research in nutrition during the past twenty-five years has been not only to emphasize the value of sunshine and fresh air but also to give the reasons why in a system of diet the following familiar foods have unusual dietary significance: meats, including glandular organs, poultry and fish; eggs; milk in its many forms and products; fruits and vegetables (fresh, canned and frozen); legumes, and cereals and their products, especially whole grain products. Research has provided vitamin capsules, vitamin tablets, brewers' yeast tablets and numerous other vitamin preparations, many of which are excellent supplements to a diet when certain foods are disliked, but one should know what they do not contain as well as what they do contain.

Nutrition, as stated earlier, has been referred to as "an economic, agricultural, industrial and commercial problem, as well as a problem in physiology."<sup>4</sup> However, because of the results of recent researches on diet and its relation to disease conditions, from the standpoint of preventive medicine and of public health, nutrition may now be considered largely a problem of economics and education.

#### ABSTRACT OF DISCUSSION

DR. M. J. ROSENAU, Chapel Hill, N. C.: One of the pleasures of discussing a paper is to take issue with the reader of the paper regarding facts or views. That joy is denied me because Dr. Simmonds has presented such an admirable contribution that all I am able to do is to confirm what she has said. There are certain things which may stand emphasis. In the story of the growth of knowledge of nutrition, she did not mention her own long list of notable contributions. She brought out how recent is our scientific knowledge. As a matter of fact, nutrition, while the youngest science, is the oldest in the arts. We can go back to Leviticus, in the early days of the Mosaic Code, which emphasized nutrition and the importance of selecting diet and other things with reference to it. There were two things that brought nutrition to the fore, even before these scientific contributions, and one was tuberculosis. The two

papers read today again mentioned that diet, sunshine, rest and other factors that deal fundamentally with nutrition have a bearing on the prevention and treatment of tuberculosis. That is where nutrition was taken out of playing the role of cinderella in the kitchen and taken to the ball, but she was not crowned until the vitamin discoveries. It pleased me to hear Dr. Simmonds sound a warning that on account of the novelty and brilliancy of the discoveries, progress has been so extraordinary that it has blinded us to other phases of nutrition and overemphasized the role the vitamins play. I was glad to hear her say that the place to buy vitamins is in the market, by patronizing good sunshine, and in the dairy rather than in the drug store. Taking too many vitamins that may be bought in all sorts of concentrates is about as foolish as oversalting our food. Too much of even a good thing like vitamins in certain instances is harmful. Despite what we know about nutrition, the practice lags behind the facts. Science has shown the way but it requires society to apply the facts; in other words, it becomes an economic problem, a problem in sociology; it becomes enormously complex. Another point that was clearly mentioned in the paper was that we should not place in our minds a period after any of these things about nutrition that we feel we know today. After all, the surface has only been scratched. There are many related phases of it, dealing with a norm which acts and reacts on the food we eat, depending on the air we breathe, the sunshine to which we are exposed and other things. Progress along these lines will continue, and out of this complexity will come simplicity and, in the end, a relief of one of the greatest of all burdens that mankind now suffers from; namely, malnutrition.

DR. W. A. SAWYER, Rochester, N. Y.: I am glad that Dr. Simmonds mentioned the educational feature of nutrition because for those of us having to do with employees in industry it is becoming an increasing problem; not only do we need to know what to eat but I find that workers now need to know when to eat. Commercial interests are pushing vending machines of all kinds, placing many of them in factories. Labor unions are demanding them and, as a result, we find that workers have a tendency to eat more or less continuously. Dr. Haggard, in "Diet and Physical Efficiency," states that eating five times a day is perhaps as satisfactory as eating three times a day. I should like to know whether Dr. Simmonds has any thoughts on that question.

DR. L. D. BRISTOL, New York: The place of nutrition education is well recognized, particularly in our public schools and in the field of public health, but it is only within the last few years that this subject has been recognized in industry. For the last nine years in several companies of the Bell system about 10,000 women employees have completed a twelve lesson nutrition course, a volunteer course taken out of hours, entirely on the employees' time, and we feel that such education is definitely allied to the prevention of absence because of sickness and to the increase of health and efficiency on the job. There are only a few industrial organizations at present that have nutrition specialists on their staffs. Dr. Sawyer's organization, the Eastman Kodak, is one, and our organization is another. Our classes are held in groups of about twelve, the practical work being carried on in company dining rooms and kitchens. At the end of this twelve lesson course the employee is given a certificate of graduation. I believe that more and more industrial organizations, particularly the larger companies, eventually will include nutrition education in their health education programs.

DR. NINA SIMMONDS, San Francisco: The time allotted did not permit me to discuss the practical aspects of handling an individual's nutrition problems. I have formulated a series of questions which I have called "The Nutrition History," which has proved to be of assistance in handling these problems. Any one interested may secure a copy by writing to me at the University of California, the Medical Center, San Francisco. Before discussing an individual's nutrition problems with him it is necessary to have the person keep a ten days to two weeks record of all foods eaten and the approximate amounts, including extra foods, such as candy, ice cream, milk shakes, cocktails and coca-colas. This record usually



gives a good idea of a person's present food habits and interests; it may or may not be representative of his former food habits. From this record and the answers to the questionnaire and, of course, discussing the problems with the individual, it is possible to work out a satisfactory dietary regimen. It is best to make the fewest possible changes in a person's food setup compatible with an adequate diet. Although all dietary factors may be secured from foods, because of dislikes, habits, convenience and so on, vitamin tablets and other preparations have proved valuable dietary supplements; but one should know what they do not contain as well as what they do contain. Diet and its relation to disease conditions cannot be discussed here, but The Nutrition History is also of value in handling these problems.

## ALCOHOL IN RELATION TO TRAFFIC ACCIDENTS

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There has been much discussion for many years of the effects of alcohol on human beings. A major question now is the effects of alcohol on the automobile driver. All too often discussions involving alcohol have been colored by emotion and have suffered from lack of facts.

Recognizing the importance of drinking to safety, I hope to define objectively and unemotionally the part alcohol plays in the accident problem. Scientific methods have lately been perfected that make such a definition possible. Through their use, it is hoped that a step forward will be taken in the solution of a serious problem.

Alcohol has long been considered an important cause of accidents. Every one will concede that it impairs the judgment and physical abilities. With the coming of the motor car, the importance of alcohol as a causative factor in accidents became increasingly apparent. Driving a motor car calls for quick thinking, rapid and coordinated operation of the controls of the car and accurate judgment. With the increase in speed of motor cars, coupled with increased congestion on highways and streets, the problem of the drinking driver has become increasingly acute.

It is the major purpose of this study to define clearly the place of the drinking driver in the present day accident problem. How much more liable is the drinking driver to be involved in an accident than the sober driver? In what percentage of accidents is alcohol a factor? In other words, an answer is sought to the questions "Are you more liable to be in an accident if you drive after drinking than if you drive not having had anything to drink? How much more liable are you?"

Most important of all is the aim to show at what concentration alcohol in the human system becomes a factor in accidents. When one encounters a person who has been drinking there is little question in one's mind as to whether or not he is under the influence of alcohol. However, when it is necessary to prove in court that he was under that influence, the problem becomes involved. Police departments have long used simple rule of thumb technics, such as observing the suspect's breath, gait, speech and condition of clothes and putting him through such tests as touching the tip of his nose

with his finger, enunciating "methodist episcopal" and writing a few short sentences from dictation to be compared later with his usual writing.

The National Safety Council's Committee on Tests for Intoxication has developed an intoxication report form<sup>1</sup> intended to make the most reliable use of such methods as a means of determining their dependability. This form has refined the technic of determining drunkenness from observation. It attempts to take into account and tries to get proof to rebut all the possible defenses that the person may offer, and it provides for the recording of all subjective evidence as to his condition.

The committee recognized that this method is subject to a variety of attacks by the defense because many times the condition reported could have been caused by injury or illness.<sup>2</sup> Defense attorneys make the most of this. In many cases they are able to create enough doubt as to the defendant's intoxication to secure an acquittal, especially in a jury trial. It is difficult even for a physician to take the stand and say positively from a subjective examination whether or not a person was under the influence of alcohol. It is still more difficult for the police officer to do so. While systematic, complete recording of physical symptoms of intoxication are of value, more objective tests are obviously necessary in many cases. To encourage the use of more accurate and scientific methods, the form also includes provision for chemical tests of body fluids.

Long before automobile accidents became the serious problem they now are, it was known that a relatively accurate measure of the amount of alcohol in a person's system could be made from the analysis of body fluids, as well as from the analysis of the organs themselves.

Further, an accurate correlation was found between the amounts of alcohol after absorption in the different body fluids and organs. If the amount of alcohol in one part was known, the amount in another could be accurately calculated. For convenience the amounts found in the various other fluids are related to the amount of alcohol in the blood. For example, the alcohol in the blood is 1.2 times that in the brain, 0.9 times that in the spinal fluid, 0.8 times that in the urine and 2,000 times that in the alveolar air.

When the need for such analysis was felt, certain of the body fluid tests were refined and developed. The most practical of the tests determined the alcoholic content of the spinal fluid, blood, urine, breath and saliva. There are serious objections to the first two. The spinal fluid test is dangerous because of the difficulty in drawing out a sample. Also it has the practical difficulty that it requires a physician to take the sample. The blood test has similar disadvantages to a lesser degree. Courts frown on any technic that might endanger the person examined, and there is a possible danger of infection in taking a blood sample.

Extensive developmental work has been done on tests of the urine<sup>3</sup> and breath.<sup>4</sup> They have been refined so that they now are of practical value. The saliva test

1. National Safety Council, Committee on Tests for Intoxication: *Tests for Driver Intoxication*, National Safety Council, 20 North Wacker Drive, Chicago, 1937.

2. Gunn, H. M.: A Paper delivered before the prosecutors' section of the Ohio Bar Association, July 1936; available in mimeographed form from the National Safety Council, Committee on Intoxication, Chicago.

3. Heise, H. A.: The Specificity of the Test for Alcohol in Body Fluids, *Am. J. Clin. Path.* 4: 182 (March) 1934.

4. Harger, R. N.; Lamb, E. B., and Hulpieu, H. R.: A Rapid Chemical Test for Intoxication Employing Breath, *J. A. M. A.* 110: 779-785 (March 12) 1938.

is of proved accuracy and may come into as general use as the tests of the urine and breath.

Through urinalysis the alcohol in the blood and thus in the brain can readily and with fair accuracy be determined. It is the alcohol in the brain that affects the person, and not the gross amount drunk. Through the use of the test it is possible to tell the extent of intoxication. The Committee on Tests for Intoxication of the National Safety Council has determined the percentage of alcohol in the body fluids above which all persons will unquestionably be under its influence. A lower point has been determined that will, when coupled with supplementary evidence, serve as *prima facie* evidence of intoxication.<sup>5</sup> There are two objections to the use of urinalysis for establishing intoxication. The first is the difficulty of obtaining the specimen; the person to be tested may be either unwilling or unable to cooperate. The second is that it requires the services of a technically trained person, who is not always immediately available. However, specimens may be preserved indefinitely, allowing later checks to be made by the defense as well as the prosecution.

The breath test for alcohol, while somewhat less accurate than urinalysis, has important points in its favor. In the first place, an immediate result can be obtained. Secondly, the apparatus can be operated by any intelligent person after only a short course of training. Moreover, it is a simple matter to secure a specimen of breath. Both tests are rapidly coming into use by police authorities, and their value is being proved. The saliva test is of too recent development for proper appraisal.<sup>6</sup>

These chemical tests have made possible two attacks on the problem of the drinking driver. The first attack is in court; prosecutions based on the tests have been unusually successful. The second attack is less direct but just as significant; the tests make possible research into the relation of alcohol to accidents. Experimenters are able to find out through their use how much drinking occurs in the accident group of drivers and in the normal driving group; they can find out when this drinking occurs and the age and the sex of the drivers who drink. They can find from these tests just how much more liable a person is to be involved in an accident when he has been drinking than when he has not. Data can be uncovered on the relation between the drinking of drivers and the seriousness of accidents. In other words, by the tests it is possible to isolate an important factor in the accident problem—alcohol. If this important factor can be set apart, one can then more successfully analyze such other causes as speed, lighting, fatigue, inexperience and poor driving habits. These other causes may be more easily, more thoroughly and more accurately analyzed if the complicating factor of alcohol has been isolated. Thus quantitative chemical tests for alcohol are of unquestionable value in the ultimate solution of the accident problem.

With the research value of these tests in mind, the Evanston Police Department, the Northwestern University Traffic Safety Institute, then known as the Northwestern University Traffic Officers Training School, the Evanston Hospital Association, the St. Francis Hospital, the National Safety Council and the

Chicago Motor Club, with Dr. Herman A. Heise as consultant, began on Feb. 1, 1935, a research to determine the amount of drinking involved in accidents which resulted in hospitalization. Urinalyses for alcohol were made for a total of 270 drivers over a period of three years.<sup>7</sup> Rather good cooperation was obtained from the drivers examined. A representative cross section of all drivers involved in injury accidents was thus obtained.

This experiment produced a figure which represented the percentage of drivers involved in serious accidents who had been drinking. It was a first step in the determination of alcohol as a causal factor in accidents. Not until the next step was taken, however, would this figure assume significance. For example, if it was found that 46 per cent of drivers involved in personal injury accidents had been drinking and then it was found that 46 per cent of all drivers had been drinking, the alcohol consumed would seem to have no bearing on accidents. However, if only 12 per cent of all drivers had been drinking and yet 46 per cent of the drivers involved in accidents had been drinking, it would appear that the drinking drivers were suffering more than their share of mishaps, and drinking would seem to be a causal factor in accidents.

TABLE 1.—Hours of Testing

	Sat.	Sun.	Mon.	Tues.	Wed.	Thurs.	Fri.
12-2 a. m.....	X	X	X	..	X	..	X
2-4.....	X	X	X	..	X	..	X
4-6.....	X	X	X	..	X	..	X
6-8.....	X	X	..	X	..	X	..
8-10.....	X	X	..	X	..	X	..
10-12.....	X	X	..	X	..	X	..
12-2 p. m.....	X	X	..	X	..	X	..
2-4.....	X	X	..	X	..	X	..
4-6.....	X	X	..	X	..	X	..
6-8.....	X	X	..	X	..	X	..
8-10.....	X	X	..	X	..	X	..
10-12.....	X	X	X	..	X	..	X

Therefore a study was initiated by the Northwestern University Traffic Safety Institute for the purpose of determining the extent of drinking among drivers; of obtaining, in other words, a "normal group." The "drunkometer," recently developed by Dr. R. N. Harger of the Indiana University School of Medicine for use in court, made such a study possible. This device makes a rapid and accurate analysis for alcohol possible.<sup>4</sup> In brief, the test is based on the bleaching of an acid solution of potassium permanganate by the alcohol in the alveolar air, which, of course, is part of the normal breath.

The apparatus was set up in a trailer, thus allowing it to be readily moved from location to location throughout the area which approximated the area in which the accidents of the first part of the study occurred. The apparatus, specially built by Dr. Harger, allowed a rapid analysis of the breath samples. Tests of the breath of a total of 1,750 subjects were made in the course of a week. Testing was continuous from midnight Friday, April 22, to 6 a. m. Monday, April 25. Samples were taken from 6 p. m. to midnight Monday, from 6 a. m. to 6 p. m. Tuesday, from midnight Tuesday to 6 a. m. Wednesday, from 6 p. m. to midnight Wednesday, from 6 a. m. to 6 p. m. Thursday, from midnight Thursday to 6 a. m. Friday and from 6 p. m. Friday to 2 a. m. Saturday, April 30 (table 1). This gave a complete sampling over the period of heaviest drinking, the weekend, and alternate daylight and darkness sampling during the week. Over the week-end three crews, each

5. The point representing "conclusive" evidence of alcohol influence was chosen as 0.15 per cent (1.5 parts per thousand) of alcohol in the blood or its equivalent in other fluids or tissues. The *prima facie*, or presumptive, value was chosen as 0.10 per cent of alcohol in the blood or its equivalent.

6. Friedmann, T. E., and Klaas, Rosalind: The Determination of Ethyl Alcohol, *J. Biol. Chem.* 114: 63 (Aug.) 1936.

consisting of four testers, a supervisor and a uniformed police officer, worked on nine hour shifts. These crews were composed of Northwestern University students and police officers (Kemper fellowship students enrolled in the course in traffic police training.)

As about 25 per cent of the accidents in the previous study had occurred in territory where liquor was freely sold and 75 per cent of them had occurred in Evanston

TABLE 2.—Percentage of Drivers in Normal Population by Blood Alcohol Content

Blood Alcohol (Parts per 1,000)	Percentage of Total Drivers in Each Group	Percentage of Total Drivers at Each Point or Above (Cumulative)
1.5 and above.....	0.42	0.42
1.4.....	0.28	0.70
1.3.....	0.14	0.84
1.2.....	0.21	1.05
1.1.....	0.31	1.36
1.0.....	0.53	1.91
0.9.....	0.68	2.49
0.8.....	1.08	3.57
0.7.....	0.97	4.54
0.6.....	0.90	5.44
0.5.....	0.89	6.32
0.4.....	1.44	7.75
0.3 or less.....	4.33	12.09
No alcohol.....	87.93	87.93

or adjoining suburbs, where liquor is not sold, four of the eight locations chosen were in areas in which it was assumed that drinking drivers would be prevalent. The other four locations were in areas in which it was assumed that drinking drivers would not be very prevalent. The first four locations were on highways passing through Evanston for only a short portion of their length or on streets running into immediately adjoining territory where there were large numbers of taverns. The other four locations, where it was assumed that alcohol would be less prevalent, were well within the interior of Evanston. Actually no difference between the locations was found. This would indicate that because of the ease of movement in motor traffic, at least in limited areas, alcohol is evenly distributed, with little reference to its points of easiest accessibility.

The uniformed police officer stopped all cars in a purely chance order determined by the rate at which the experimenters doing the analyses could work. There was no discrimination as to type or price range of automobile. As soon as the police officer had stopped the car, he immediately retired from the picture so that there would be no hesitancy on the part of the subject through fear of prosecution. No attempt was made to explain the nature of the test to the drivers unless they showed active, intelligent interest in the test and testing procedure. Newspaper publicity was avoided.

Because some difficulty was anticipated in gaining the cooperation of the drivers approached, a technic was very carefully worked out to obtain the samples of breath. After the uniformed officer stopped the car, a tester approached the driver and after a short, set, introductory speech, asked six preliminary questions, such as "Are you bothered by headlight glare?" for the purpose of gaining his cooperation and to allow him to get over the strangeness of the situation. The driver was then presented with the specially constructed wide-mouthed white balloon (the large wooden mouthpiece facilitated inflation) enclosed in a cellophane envelop, so that there would be no possible objection on the grounds of sanitation. The assistants who approached the driver were dressed in physicians' white smocks for the dual purpose of making a favorable impression

on the driver and of making themselves readily visible to other traffic, more especially during the night. Cooperation was readily gained from the drivers with the exception of twenty-four, who refused to be tested.

As soon as the sample of breath was obtained the experimenter wrote the subject's age and sex and the location and time of the test on a tag, which he then attached to the neck of the balloon. The balloon was taken to the trailer laboratory, where one of the testers immediately made a qualitative test on about 1,000 cc. of the breath to determine whether or not alcohol was present. In the event that alcohol was present a quantitative analysis was made on a standard "drunkometer." Breath volume was taken in conjunction with the regular carbon dioxide absorption tube. These tubes were weighed daily at the chemistry laboratory of Northwestern University by graduate students. All the weights were taken on the same balance.

These tests resulted in the establishment of a control group giving an accurate picture of the amount of drinking among drivers in the general population. Analyses were made on the basis of time of day, day of week, sex, age and amount of alcohol present.

#### THE OCCURRENCE OF DRINKING

The sample of the general population tested showed that about 12 per cent of all the drivers on the road had been drinking and that about 2 per cent of the drivers on the road had been drinking so much that their blood contained 1 part of alcohol to 1,000 parts of blood (or 0.1 per cent), or enough to impair their driving ability. About one driver in every 250 had been drinking to such an extent that his blood contained 1.5 parts of alcohol to 1,000 parts of blood (or 0.15 per cent), enough to place him unquestionably under the influence of alcohol. Table 2 shows this in detail.

The hospital figures (table 3) show that 47 per cent of the drivers involved in personal injury accidents had been drinking, 25 per cent of the drivers so involved had over 1 part of alcohol to 1,000 parts of blood and 14 per cent had over 1.5 parts of alcohol to 1,000 parts of blood.

TABLE 3.—Percentage of Drivers in Personal Injury Accident Group by Blood Alcohol Content

Blood Alcohol (Parts per 1,000)	Percentage of Total Drivers in Each Group	Percentage of Total Drivers at Each Point or Above (Cumulative)
1.5 and above.....	13.81	13.81
1.4.....	1.49	15.29
1.3.....	1.49	16.77
1.2.....	2.98	19.77
1.1.....	2.24	22.01
1.0.....	3.36	25.37
0.9.....	0.75	26.12
0.8.....	2.24	28.36
0.7.....	4.10	32.46
0.6.....	0.37	32.83
0.5.....	0.37	33.20
0.4.....	0.75	33.95
0.3 or less.....	12.68	46.63

The relationship between the proportions of drivers in each blood alcohol group (1.5 parts per thousand, 1.4 parts per thousand and so on) for the general driving population compared with the accident group is the most significant contribution of this research. It will be discussed in detail later.

The percentage of drinking drivers by two hour periods for the entire week is shown in chart 1 and table 4. As testing was not continuous throughout the week but alternated between daylight and dark, the

resulting gaps in the chart were filled in by substituting the complementary hours of the following day. While this did not result in as accurate a curve as one drawn from a continuous sampling, it is doubtless sufficiently near the real curve for all practical applications. Conclusions that can be drawn from this curve are obvious. It definitely shows, for example, the preponderance of

Suppose, as an example, that 10 per cent of the drivers tested between 10 a. m. and 12 noon at a certain location have been drinking and that, according to previously made counts, 1,000 cars pass the base location during the two hour interval. Thus (assumption 1) of the 1,000 drivers, 100 had been drinking. If then, on this basis during the twelve two hour periods of the day,

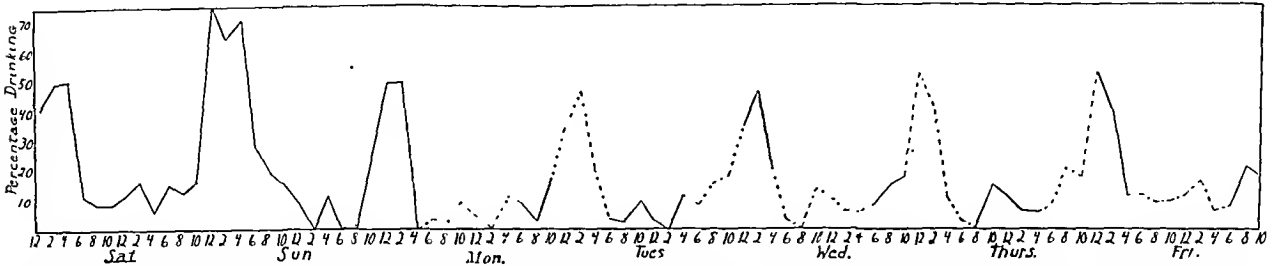


Chart 1.—When drivers drink. Percentage of drivers drinking tested in the control group by two hour periods for the week. The unbroken line indicates the percentage drinking and the broken line the percentage drinking on the following day in hours not tested on the day shown (used to give a continuous curve).

drinking over the week-end, a fact of common observation. It should be noted that the peak for Saturday night and Sunday morning goes higher and lasts longer than any other peak. This of course is because Sunday is a holiday.

Because of the relatively few subjects, a similar curve for the personal injury accident group tested is not presented. Fluctuations in the curve would be so great as to render it valueless.

Comparisons have been made, however, on the basis of hour of the day between the personal injury accident group and the general population group. These com-

2,000 drivers passing the base location had been drinking, the 100 drinking from 10 to 12 would represent 5 per cent of the total number drinking in the day. In the case of the accident group no such computation is needed, because the three year experience as taken by the hospitals closely approximates the real distribution.

TABLE 5.—Number of Drinking Drivers by Two Hour Periods of the Day on the Basis of a Total of 100

Two Hour Period	Number Drinking, Accident Group	Number Drinking, Control Group
12-2 a. m.	15.5	14.0
2-4	11.7	5.9
4-6	7.8	2.4
6-8	5.8	1.2
8-10	4.9	6.0
10-12	4.9	9.3
12-2 p. m.	1.9	7.2
2-4	4.9	6.3
4-6	4.9	15.7
6-8	16.5	10.8
8-10	14.6	8.4
10-12	6.5	9.9

TABLE 4.—Percentage of Drinking Drivers Tested by Two Hour Periods for the Week

	Sat.	Sun.	Mon.	Tues.	Wed.	Thurs.	Fri.
Midnight 12-2	41.6	75.0	50.0	...	34.5	...	32.4
2-4	50.0	65.0	50.0	...	46.7	...	40.0
4-6	50.0	71.4	0	...	20.0	...	11.1
6-8	11.1	28.6	...	3.4	...	3.0	...
8-10	8.3	19.2	...	2.7	...	0	...
10-12	8.9	17.7	...	9.1	...	14.3	...
Noon 12-2	11.1	8.3	...	3.1	...	11.4	...
2-4	15.8	0	...	0	...	6.1	...
4-6	3.7	11.4	...	11.4	...	6.1	...
6-8	15.2	0	8.8	...	8.3	...	7.4
8-10	12.9	0	2.7	...	15.2	...	20.5
10-12	16.9	19.4	17.1	...	17.6	...	17.8

parisons were made both by the number of drinking drivers per two hour period and by the percentage of drinking drivers tested during each two hour period. Similar comparisons were made on a day of the week basis.

The hour of the day comparison of the accident group and the general population group on the basis of number of drinking drivers is shown in table 5 and chart 2. That this comparison might be made, the curves were drawn on the basis of 100 as the total number of cases in each group. This method of computation is based on two assumptions: (1) that the sample for the location during the two hour period represents the incidence of alcohol in the city for that period and (2) that the volume of traffic at a base location in the city during the period represents the volume of traffic for the city during the period. The base location, incidentally, has been established for years and is constantly used as standard by the city traffic engineer. The volume count at the base location is considered roughly representative of Evanston traffic, so it serves as a constant basis of comparison.

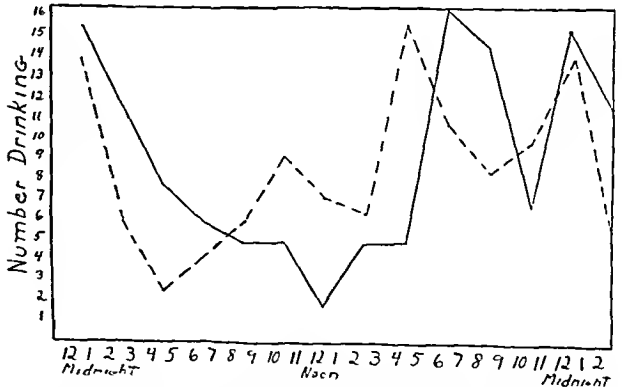


Chart 2.—Number of drinking drivers by hours of the day based on an assumed total of 100. The unbroken line indicates the accident group and the broken line the control group.

In this case it was necessary only to total the cases and find the percentage that each two hour group was of the total.

The charts showing the number of drinkers in the accident group and the normal group are similar in form. While there are certainly divergences in the curves, they can well be accounted for on the basis of small numbers, as the general form of the curves is

nearly the same. The similarity is especially noticeable in the case of the two peaks of both curves. The first is at about 6 in the evening and the other at midnight. The lag of the accident curve might well be the result of the difference between the time of accident occurrence and the time the report was made in the hospital, as often the time of occurrence of the accident was not shown on the card and the time the test was made at the hospital was used.

As both the curve for the accident group and that for the normal group show a peak at 6 p. m. and at midnight, it can correctly be held that such peaks would exist if the entire population was tested. However, caution must be used in assigning causes to these peaks. Possibly (and this is only conjecture) the 6 p. m. peak is the result of the corresponding traffic peak; that is, a large number of persons on the street would tend to imply a large number of persons drinking. The midnight peak might well be the result of an actual increase in drinking in combination with a still relatively large flow of traffic.

These data when presented on the basis of percentage of persons drinking give a somewhat different appearance (chart 3, table 6). Here there is only a single

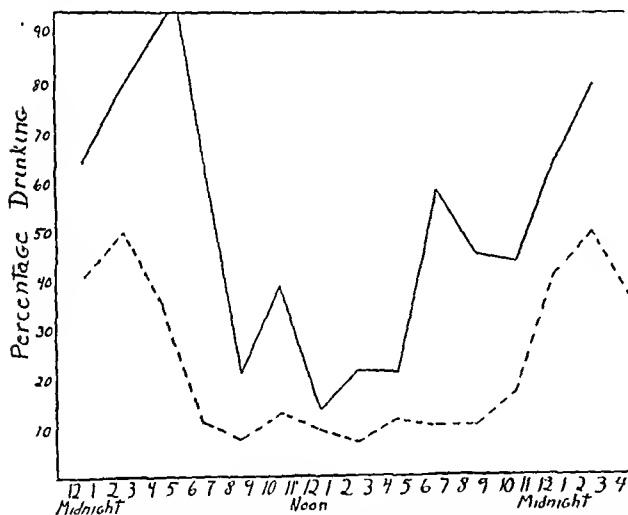


Chart 3.—Percentage of total drivers drinking by two hour periods. The unbroken line indicates the accident group and the broken line the control group.

TABLE 6.—Percentage of Drinking Drivers by Two Hour Periods of the Day

Two Hour Period	Percentage Drinking, Accident Group	Percentage Drinking, Control Group
12-2 a. m.	64.0	40.8
2-4	80.0	50.0
4-6	100.0	55.0
6-8	66.6	10.2
8-10	20.8	6.3
10-12	28.5	12.8
12-2 p. m.	13.2	8.6
2-4	20.8	6.5
4-6	20.8	11.7
6-8	58.6	9.9
8-10	45.4	10.0
10-12	43.7	16.3

peak, in contrast to the double peak shown in the case of the number of drinking drivers. Also the peak occurs much later. The curve for the general population group is quite regular, increasing till early morning, dropping sharply, running on a level from about 6 in the morning till 8 in the evening and then increasing till about 3 a. m. A peak showing 50 per cent of the drivers on the road as having been drinking is then

reached. The curve for the percentage of drivers in personal injury accidents is similar though somewhat more irregular. This irregularity can be discounted to a large extent because of the smallness of the sample. A peak is reached in the period from 4 to 6 a. m. of 100 per cent drinking. This, however, is in all probability a result of the smallness of the sample, though doubtless the true peak would be quite high. A lag is also to be noted that is similar to the lag of the accident

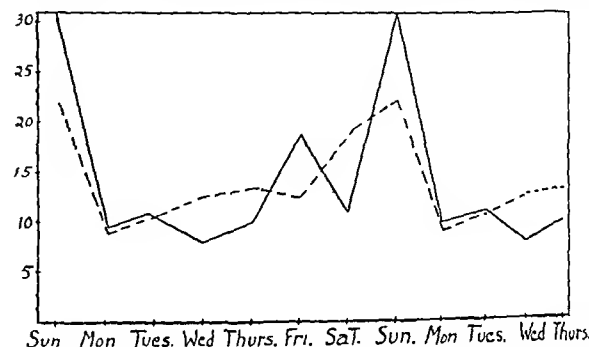


Chart 4.—Number of drinking drivers by day of the week on the basis of an assumed total of 100. The unbroken line indicates the accident group and the broken line the control group.

TABLE 7.—Number of Drinking Drivers by Days of the Week on the Basis of a Total of 100

Day of Week	Accident Group	Control Group
Sunday.....	31.2	22.01
Monday.....	9.6	9.0
Tuesday.....	11.2	10.8
Wednesday.....	8.0	12.8
Thursday.....	10.4	13.5
Friday.....	18.4	12.6
Saturday.....	11.2	10.2

group in the charts just discussed, where the number of drinking drivers was presented, and it can probably be accounted for in the same way.

Chart 4 and table 7 present the number of drinking drivers in each group by days of the week. For purposes of comparison, as in the case of the hour of the day presentation, these data were reduced to a percentage basis to obtain comparable curves. One point must be noted in the presentation of this curve; because the sample taken (table 1) included alternate periods of daylight and dark on alternate days during the week and if used uncorrected would result in an inaccurate representation, a correction was made. This correction consisted in combining the score for each day with that of the following day in the case of Monday and the previous day and the following day in the case of Tuesday, Wednesday and Thursday. This is better illustrated in table 8.

Again there is a striking similarity between the accident group and the control group. The control group again presents a very regular curve, while the curve for the accident group, because of the small numbers, is somewhat more irregular, although running quite close to that of the control group. The peak for both groups occurs over the week-end, Saturday and Sunday. The peak is actually reached early Sunday morning, as shown in the chart for the week by hours. Thus the largest number of persons drinking is found early Sunday, with the number dropping off sharply and then gradually increasing till the next week-end.

The points discussed in connection with number of persons drinking would apply equally well in a discus-



sion of the percentage of persons drinking (chart 5, table 9). Unlike the peak for hour of the day, the traffic peak for days of the week and the peak for percentage of drinking are the same. The curve for the percentage of drinking drivers in personal injury accidents is irregular in comparison with the curve for the normal group, and the week-end increase is followed by a sharp drop and then a gradual build-up to the week-end. It should be noted that there are over twice as many drinking drivers during the week-ends as on week days.

TABLE 8.—Correction for Curve Shown in Chart 7

Sunday	A complete day, no correction	
Monday (dark)	Average of Mon. and Tues. Used for Monday score	
Tuesday (light)	Average of Tues. and Wed.	Average of Mon., Tues. and Wed. Used for Tuesday score
Wednesday (dark)	Average of Wed. and Thurs.	
Thursday (light)	Average of Thurs. and Fri.	Average of Tues., Wed. and Thurs. Used for Wednesday score
Friday (dark)	Used for Friday score	
Saturday	A complete day, no correction	
	Average of Wed., Thurs. and Fri.	Used for Thursday score

Unfortunately no data were secured as to the age of the drivers in the personal injury accident group. However, the results of an age tabulation in the control

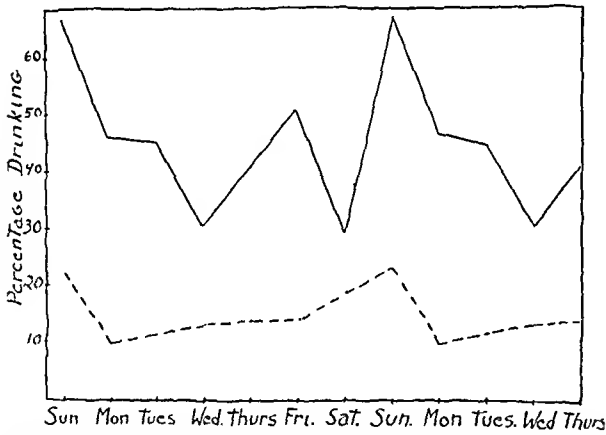


Chart 5.—Percentage of drivers drinking by day of the week. The unbroken line indicates the accident group and the broken line the control group.

TABLE 9.—Percentage of Drinking Drivers by Days of the Week

Day of Week	Accident Group	Control Group
Sunday.....	67.2	21.5
Monday.....	46.2	10.0
Tuesday.....	45.1	11.5
Wednesday.....	31.3	13.4
Thursday.....	41.9	14.0
Friday.....	51.1	14.2
Saturday.....	29.2	18.6

study are of interest (chart 6, table 10). A definite peak showing over 28 per cent of drinking drivers is found at the age level from 25 to 30 and is followed by a gradual decline. The extreme lower and the extreme upper age limits were not determined, but the lower limit was probably about 16 or 17 and several persons in the 70's were tested.

Little comment is needed on the significance of this curve. It follows quite closely the expected. It is an accurate indication of the relation between age and driving after drinking.

Since there are many more men drivers than women and women do most of their driving during the day, a much smaller percentage seemed to have been drinking.

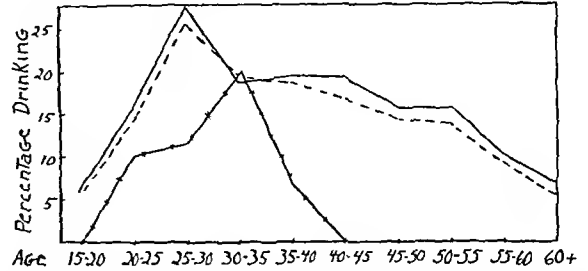


Chart 6.—Percentage of drinking by age. The unbroken line is for men, the line marked with crosses for women and the broken line for all cases.

TABLE 10.—Percentage of Total Drinking by Age

Age	Men	Women	Total
15-20.....	5.7	0	4.8
20-25.....	15.5	10.3	14.9
25-30.....	27.7	12.0	20.2
30-35.....	15.4	21.2	18.7
35-40.....	19.5	6.7	18.1
40-45.....	19.7	0	16.6
45-50.....	15.7	0	14.6
50-55.....	15.5	0	14.3
55-60.....	10.0	0	8.7
60 and over.....	6.9	0	5.9

However, when the figures are presented on the basis of percentage drinking by hour of the day (chart 7, table 11) there is little difference between the curve for men and that for women. The peak reached by women at 4 and 5 a. m. is probably spurious and due to the small number of cases, as very few women proportionately were driving at that time. Additional data are needed here to smooth out these curves. No tabulation on the basis of sex was made in the accident group because of the smallness of numbers.

RELATION OF ALCOHOL TO ACCIDENTS

There are thirty-three times as many drivers whose blood contains 1.5 parts per thousand of alcohol in a group of drivers involved in personal injury accidents as in the general driving population. There are ten times as many whose blood contains 1.3 parts per thousand as there are in the general population. Presented graphically, these are two points on a regularly descending curve that approaches a ratio of 1 to 1 at some point near 0.5 part per thousand. The correlation between alcohol in the blood and increased accident expectancy was worked out on the basis of the data of this study at 0.76 (plus or minus 0.07).

The point in the alcohol content of the blood at which this 1 to 1 ratio is reached, that is, the point at which the same percentage of drivers appears in the personal injury accident group as in the general population, is of considerable significance. There has been much discussion of the relation between alcohol in the blood and intoxication, based both on observation and on the use of objective tests, in an attempt to set a point at which the drinking driver should be removed as potentially dangerous. The curve mentioned (chart 8, table 12) goes far toward showing where this point occurs, for, as soon as more drinking drivers appear in the personal injury accident group than in the general population,

the ratio goes over 1 to 1. Alcohol can be considered as causing this increase in accidents over the expected. From these data it would appear that this point is about 0.5 to 0.6 part of alcohol to 1,000 parts of blood. Additional cases are needed here to obtain a smoother, more reliable, curve. It is not suggested that

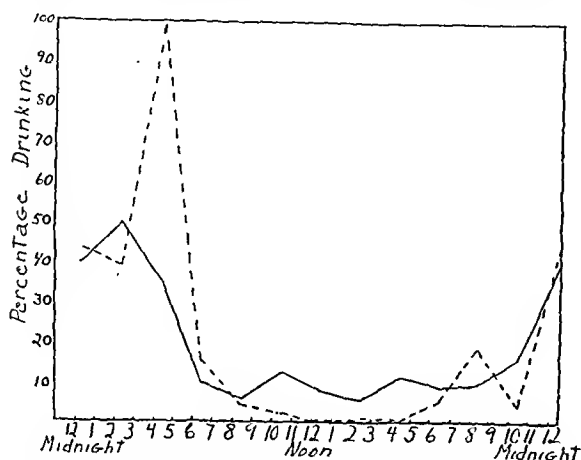


Chart 7.—Percentage of drinking by hours of the day on the basis of sex. The unbroken line is for men and the broken line for women.

TABLE 11.—Percentage of Drinking by Two Hour Periods on the Basis of Sex

Two Hour Periods	Entire Group	Women Only
12-2 a. m.	40.8	44.4
2-4	50.0	40.0
4-6	35.0	100.0
6-8	10.2	16.7
8-10	6.8	4.0
10-12	12.8	2.9
12-2 p. m.	8.6	0
2-4	6.3	0
4-6	11.7	0
6-8	9.9	5.3
8-10	10.0	18.2
10-12	16.3	4.3

a point for the blood alcohol content just over the 1 to 1 ratio be used for other than prima facie evidence of intoxication, but the location of this point should go far toward determining the lower limits of blood alcohol at which persons are considered under the influence of alcohol.

Thus a concomitant variability is demonstrated. It has been shown further that there are several times as many drinking drivers in accidents as in the general driving population. But does a causal relationship exist? In other words, is this increase in alcohol actually the cause of the increased accidents? Is there possibly a factor or factors causing both the increase in alcoholic content of the blood and the increase in chances of accident? Would there be any basis for advancing some other cause for this relationship?

Among other possible causes, might not a common one be darkness? Could this relationship exist because people normally drink at night, when darkness with its effect on visibility, causes personal injury accidents to increase? People drink at night because they have free time then; accidents happen at night, when visibility is poor. Then is this relationship between accidents and alcohol just chance? Is darkness really the cause? Table 13 and chart 9 prove that this is not the case. Personal injury accidents when related to the amount of traffic on the road, or exposure, have their peak after midnight. (Divide the traffic count by two hour periods by the personal injury accidents by two hour periods.) If darkness was the cause of this increase, it would be

logical to expect the curve to be approximately the same during all hours of darkness. Instead, on the average it is 2.35 times as high in the hours of darkness after midnight as it is in the hours before. Alcohol, it must be remembered, has its peak after midnight, just as do personal injury accidents (table 6 and chart 3).

However, it might be argued that speeds increase. True, but why do they increase? There are two possible major causes. The first is the decrease in congestion and the second the increase in alcohol. Any increase in speed as a result of a decrease in congestion would tend to be offset as a causative factor by the decrease in congestion. While speed doubtless plays an important part in causing accidents, it might well be treated as a symptom of an underlying cause. Certainly alcohol, with its removal of inhibition, might well be a cause of increased speeds and thus of accidents. It must further be remembered that, unlike decreasing congestion, alcohol offers nothing to compensate for the increase in speeds which it causes. Rather, by increasing reaction time and decreasing perceptual ability<sup>7</sup> it makes the speed still more dangerous.

Fatigue<sup>8</sup> might be a cause of accidents occurring at such times and in such amounts as to displace alcohol

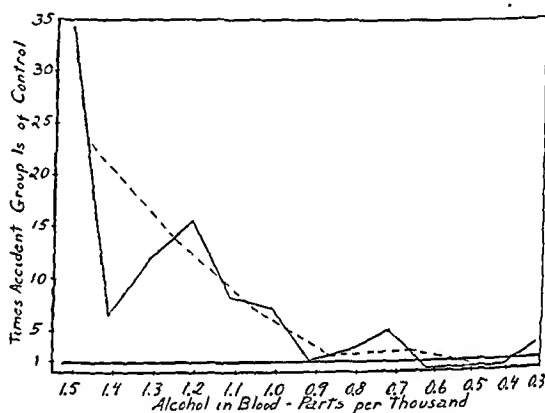


Chart 8.—Number of times drivers in the accident group are of control in the control group for each amount of blood alcohol. The broken line shows the curve smoothed.

TABLE 12.—Number of Times Accident Group is of Control for Each Amount of Alcohol

Blood Alcohol Content	Times (Accident Group Over Control)	Accident Group (Smoothed Curve) (Average at 2 Parts)
1.5 and above	33.12	21.98
1.4	5.34	
1.3	10.80	13.00
1.2	14.54	
1.1	7.30	6.53
1.0	6.10	
0.9	1.28	1.75
0.8	2.08	
0.7	4.23	2.29
0.6	0.41	
0.5	0.48	0.45
0.4	0.52	
0.3 or less	2.93	2.91

as the assumed cause of accidents. Certainly, like drinking, fatigue occurs most commonly at night. Like drinking too it results in diminished ability to drive. However, an examination of the facts will show that

7. Miles, W. R.: Psychological Effects of Alcohol on Man, in Emerson, Haven: Alcohol: Its Effects on Man, New York, Macmillan Company, 1935, chapter 10.

8. Fatigue for the purpose of this discussion is taken to mean the effects of prolonged activity whether they have only an actual physical basis, such as an actual physical disability, or only a mental basis, such as the effect of monotony, or a combination of these two.

it would be impossible for fatigue to account more than superficially for the increase in accidents associated with alcohol.

It is difficult to study the problem of fatigue. No methods that will reliably and validly measure fatigue are available. Actual physical losses in ability are difficult to disassociate from the effects of monotony, as the results of the two factors may be the same. Numerous attempts have been made to measure, subjectively at least, the physical aspects of fatigue, but all too often the results have failed to be conclusive. One measure of fatigue that has found general acceptance is accident records. Long experience in industry has shown that accidents increase in proportion to the time spent at work, with slight decreases as monotony is relieved as the end of the working period approaches. It is probably safe to assume that the curve for automobile accidents caused by fatigue<sup>9</sup> would be similar to that obtained for accidents caused by the driver's falling asleep. Difficulties in assigning causes of accidents may have resulted in some inaccuracies, but the general shape of this curve is reliable. It shows that the largest number of accidents caused by the driver's falling asleep occurs at about 4 o'clock in the morning. Comparison of this curve with the curve showing the number of drinking drivers or that showing the number of personal injury accidents involving alcohol shows little relation. While the fatigue curve has its peak in the early morning hours, the curve for drinking drivers and the curve for accidents have their peaks in the early and late evening hours.

There are several further bits of evidence tending to prove alcohol rather than fatigue the prime causative factor. First, in the area of this experiment fatigue would be at a minimum. The largest part of the area was unquestionably urban, with a heavy flow of traffic. The average driver would be driving only a comparatively short distance. Because of this fact and the nature of the route, monotony would not be the important factor in causing fatigue that it might be on a highway, where there would be no relief from driving at a relatively constant speed on long stretches of road. Another reason to minimize fatigue is that any data gathered on fatigue as a cause of accidents tend to place it as a causative factor in not more than 2 or at the most 3 per cent of the accidents. The most reliable study so far reported, done in Massachusetts by the Registry of Motor Vehicles and based on actual investigations rather than drivers' reports, shows that 1.98 per cent of the total accidents were caused by sleep or fatigue. Contrast that with this study, which shows that 47 per cent of drivers had been drinking and that 14 per cent had drunk so much that they were unquestionably under the influence of alcohol. Several other points should be noted in passing. For instance, and no experimental evidence exists to back this statement, quite possibly the fatigued driver is more inclined to compensate for his disability than is the drinking driver. Probably the fatigued driver will slow down and in general drive more carefully than the drinking driver. Of prime importance is the ability to recover much more readily from fatigue than from alcohol. Stopping the car, getting out and walking, drinking coffee and other measures will at least temporarily dispel fatigue. This, unfortunately, is not true of alcohol.

With the data at hand it is impossible to make an accurate, complete statement of the relation of fatigue

and alcohol as causes of accidents. The previous discussion has of necessity been based more on conjecture than on facts. One point, however, must always be remembered in any discussion of this problem; the effects of fatigue are always heightened by alcohol. Reaction times slowed up by fatigue are even slower when alcohol is present. Vision blurred by need for rest is even more blurred with the addition of alcohol. Fatigue can and does cause a large number of accidents, but all available evidence tends to minimize it as a cause when compared with alcohol.

Another reason for this concomitant variability of personal injury accidents with drinking should be

TABLE 13.—*Personal Injury Accidents (Drinking and Non-drinking Drivers) Related to Traffic by Hour of the Day*

(Expressed as a percentage of total traffic and then based on an assumed total of 100)	
Two Hour Periods	Personal Injury Accidents Corrected for Traffic
12-2 midnight.....	4.3
2-4.....	6.3
4-6.....	9.6
6-8.....	2.7
8-10.....	3.7
10-12.....	3.9
12-2.....	4.1
2-4.....	2.8
4-6.....	3.4
6-8.....	3.3
8-10.....	3.8
10-12.....	2.1

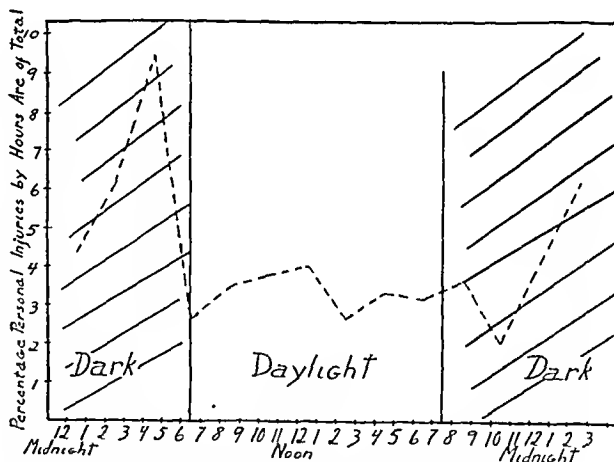


Chart 9.—Personal injury accidents related to traffic, expressed as percentage of total traffic and then based on an assumed total of 100.

considered. Possibly the person who drinks is the one who ordinarily drives recklessly and is prone to accidents. Perhaps a certain mental makeup is expressed in drinking and also in proneness to accidents. No positive answer can be given to this question. The possibility is minimized, however, when one considers that the person prone to accidents is even more prone to them after drinking, for alcohol unquestionably increases reaction time and affects vision, ability to coordinate, judgment and the other abilities so necessary in the operation of a motor car. Until experimental evidence is presented to prove otherwise, it seems logical to accept the fact that not speed, not darkness, not inherent proneness to accidents in drivers who drink, but rather alcohol, with its demonstrable effects, is the major cause of the high proportion of personal injury accidents in the hours after midnight. The part

9. Baker, J. S.: Too Long at the Wheel (pamphlet), National Safety Council, 1935.

of these other factors, though, should not be forgotten. Additional work is needed to determine their relation to the accident problem. They unquestionably exist and in themselves do cause accidents. It must be further remembered, however, that alcohol will definitely heighten the effect of any or all of these factors. Thus poor visibility because of darkness is even poorer when the driver has been drinking; increased speeds become more hazardous after alcohol has increased reaction time; drivers prone to accidents become more so after the depressive effects of alcohol release their inhibitions; the effects of fatigue are increased by drinking.

If alcohol is a general, basic, underlying cause of personal injury accidents, two things would be expected:

1. As alcohol varies, personal injury accidents should vary. That is, an increase or decrease in the percentage of drinking drivers should be accompanied by an increase or decrease in the percentage of drivers involved in personal injury accidents.

2. As alcohol varies, personal injury accidents involving alcohol should vary. That is, an increase or decrease in the percentage of drinking drivers should be accompanied by an increase or decrease in the percentage of personal injury accidents in which one or more of the drivers had been drinking.

The first statement is proved by a correlation between the percentage of drinking drivers by two hour periods with the percentage of drivers in personal injury acci-

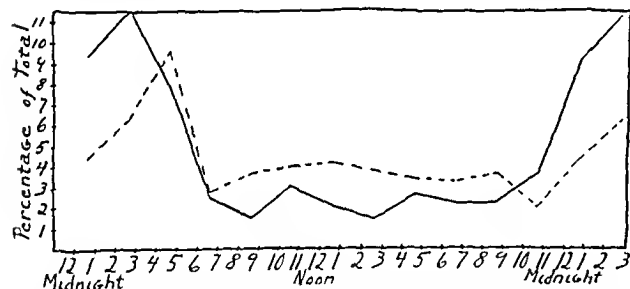


Chart 10.—Relation between the percentage of drinking drivers in the general population by hours and the percentage of drivers in the personal injury accident group by hours, based on an assumed total of 100. The broken line is for the accident group and the unbroken line for drinking drivers (control group).

TABLE 14.—Relation Between Percentage of Drinking Drivers by Hours and Percentage of Drivers by Hours in Personal Injury Accidents Based on an Assumed Total of 100

Two Hour Periods	Personal Injury Accidents	Drinking Drivers
12-2 a. m.	4.3	9.3
2-4	6.3	11.5
4-6	9.5	8.0
6-8	2.7	2.4
8-10	3.6	1.5
10-12	3.9	3.0
12-2 p. m.	4.1	2.0
2-4	2.7	1.5
4-6	3.4	2.7
6-8	3.3	2.3
8-10	3.7	2.3
10-12	2.1	3.7

dents, corrected for traffic, of 0.68 plus or minus 0.08. Chart 10 and table 14 further illustrate this point. In other words, it is demonstrated that there is a rather close correlation between drinking and personal injury accidents.

The second statement is proved by a correlation between the percentage of drinking drivers by two hour periods and the percentage of drinking drivers involved

in accidents of 0.73 plus or minus 0.07. It is further borne out by chart 4, which illustrates the close time relation of these two groups.

One more significant fact pointing toward alcohol as a causative factor must be noted. As personal injury accidents exceed traffic, drinking increases, and as the curve representative of this relationship drops, so does

TABLE 15.—Relation of Personal Injury Accidents to Traffic

(Number of times percentage of total by two hour periods personal injury group is of traffic or vice versa)

Hour of Day	Times Greater Personal Injury Accidents Are Than Traffic	Times Greater Traffic Is Than Personal Injury Accidents
12-2 a. m.	1.23	....
2-4	1.86	....
4-6	2.73	....
6-8	....	1.52
8-10	1.04	....
10-12	1.14	....
12-2 p. m.	1.16	....
2-4	....	1.28
4-6	....	1.62
6-8	....	1.06
8-10	1.10	....
10-12	....	1.88

the curve for drinking drivers (table 15). In other words, as personal injury accidents increase over the expected, drinking drivers increase similarly. It seems entirely logical to place the responsibility for this increase in accidents with alcohol. A definite concomitant variability has certainly been demonstrated, and evidence has been given to show that a causal relationship must exist.

Thus it appears that a close causal relationship exists between alcohol and accidents.

#### CONCLUSIONS

1. The highest percentage of drinking drivers occurs in the early morning hours and over the week-end.
2. The largest number of drinking drivers occurs in the early evening and over the week-end.
3. The peak age for drinking drivers is from 25 to 30.

4. Women drink and drive as much as men when the number of women driving at various hours of the day is considered.

5. The percentage of drinking drivers in the general population varies as does the percentage of drinking drivers in the personal injury accident group but falls considerably lower at all times.

6. The percentage or number of drivers involved in personal injury accidents varies as does the percentage or number of drinking drivers.

7. As the blood alcohol content increases, the number of drivers appearing in the personal injury accident group increases out of all proportion over that in the general driving population.

8. As alcohol increases, accidents increase and at a rate somewhat proportionate to the increase in alcohol.

9. Equal percentages of drinking drivers are found in the accident group and in the general population group at a point near 0.5 part of alcohol per thousand parts of blood, indicating that alcohol in that amount is not necessarily a significant cause of accidents.

10. It has not yet been objectively and conclusively proved just how important a causative factor alcohol is, and, because of the complexity of the whole accident problem, it may never be proved. The data gathered in this study, however, point in one direction only. They confirm a self-evident fact, that alcohol is a major cause of automobile accidents.

## SUMMARY

A study was made of the drinking of drivers involved in personal injury accidents and of the drinking of drivers in the general population. The second study served as a control of the first, allowing conclusions to be drawn as to the part alcohol plays in accidents.

A total of 270 persons were tested in the first study. Drivers involved in personal injury accidents who accompanied the persons injured to a hospital or drivers who themselves were injured were tested by urinalysis for alcohol.

A total of 1,750 persons were tested in the second study. Drivers were chosen at random from an area comparable to that of the first study. A complete testing laboratory, with the Harger "drunkometer," was set up in a trailer, allowing breath tests for alcohol to be made immediately.

Comparisons were drawn between the accident and control groups on the basis of hour of the day, day of the week and blood alcohol content. The control group was presented on the basis of age as related to drinking and sex as related to drinking. The time and the amount of drinking were related to the time and the number of personal injury accidents.

## ANOREXIA NERVOSA

## A METABOLIC DISORDER OF PSYCHOLOGIC ORIGIN

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In 1873, under the title of "anorexia nervosa," Sir William Gull<sup>1</sup> described a syndrome characterized by extreme emaciation and amenorrhea in the absence of any demonstrable structural disease. The illustration is a reproduction of the pictures of one of his early patients before and after treatment. About the same time Lasègue<sup>2</sup> described the condition as "hysterical anorexia." Numerous articles on the subject since then have added little to the clear, concise accounts of these authors.

The disorder occurs chiefly in adolescent girls, less commonly in men. Following some prolonged emotional conflict, either avowed or concealed, the appetite fails and the intake of food becomes grossly insufficient, leading to loss of weight. Commonly there are mild symptoms, such as uneasiness after food, epigastric distress or constipation, which provide a further excuse for the anorexia. Emaciation increases and the patient's health becomes an object of great concern to her family. Yet she remains quick, alert, active and restless and denies ill health until emaciated to a degree not seen in patients with organic disease still able to get about. "These wilful patients are often allowed to drift their own way into a state of extreme exhaustion, when it might have been prevented by placing them under different moral conditions" (Gull). When emaciation

is at its greatest, weakness increases and edema of the lower extremities may supervene. Occasionally death results from starvation. Amenorrhea may appear early or only after considerable loss of weight has occurred. When the syndrome is well developed the temperature is often subnormal, the pulse rate and the blood pressure low.

Ryle<sup>3</sup> remarks on the tendency of "physicians subject to the lure of endocrinology" to look for the cause of this syndrome in a primary deficiency or disharmony of the internal secretions. The ovaries, thyroid, adrenals and pituitary have all been blamed. In recent years attention has been directed more and more to the hypophysis, and the finding of low basal metabolic rates and altered sugar tolerance, in addition to emaciation and amenorrhea, would appear to support this idea. Recently Sheldon<sup>4</sup> has suggested that anorexia nervosa, which he recognizes clearly as a definite syndrome, may be "a 'functional' Simmonds' disease—a pituitary 'black-out' of psychological origin." This conception has won the approval of others.<sup>5</sup>

On the other hand, in the literature on Simmonds' disease one finds reports of many cases that appear to present the typical picture of anorexia nervosa. Some of these patients have responded well to the administration of various pituitary extracts and their recovery has been taken as evidence of the correctness of the diagnosis of Simmonds' pituitary cachexia. The two syndromes have a superficial similarity but, in our opinion, they are fundamentally different.

It is our purpose in this paper to report eight cases of anorexia nervosa and to point out in discussion the nature of the disorder and its various manifestations. Reasons will be presented to support the belief that this metabolic disorder is based primarily on psychologic disturbance and that its various manifestations should not be attributed to dysfunction of any endocrine gland.

## REPORT OF CASES

The following case histories are reported in brief. All the patients were carefully examined and special investigations were carried out as indicated. Negative observations, however, are mentioned only if of particular significance.

CASE 1.—E. L., a Jewish girl, aged 15, was admitted to the hospital Feb. 11, 1932. She had come to the outpatient clinic because her mother was concerned about the patient's loss of weight. Five months previously she weighed 75 pounds (34 Kg.) but had gradually lost 16 pounds (7 Kg.) during that time. Menstruation had commenced in 1930. The periods were fairly regular, occurring every twenty-eight days until September 1931, since which date she had not menstruated. She stated that she did not have any gastrointestinal symptoms but said that she had been eating very small meals because of abdominal discomfort that followed a large intake of food.

The patient was emaciated. She did not appear acutely ill but was apprehensive about being in the hospital. The secondary sex characteristics and distribution of hair were essentially normal. There was no anemia. The blood pressure was 82 systolic, 50 diastolic, the basal metabolic rate —37 per cent, the pulse rate from 60 to 95 per minute, the temperature from 96 to 99 F. The fasting blood sugar determined on six occasions varied between 69 and 77 mg. per hundred cubic centimeters. The first sugar tolerance curve (100 Gm. of dextrose) showed a slow and prolonged rise; after eight days, during which time she began to eat voraciously, the test was repeated with only 50 Gm. of dextrose and the curve was flat (table 1).

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Prof. Duncan Graham gave the authors permission to report cases 1, 3, 4, 5 and 6, and Prof. C. B. Farrar and Dr. Trevor Owen gave permission to report case 7.

1. Gull, W. W.: *Anorexia Nervosa (Apepsia Hysterica; Anorexia Hysterica)*, Clin. Soc. Tr. 7:22, 1874. In 1868 Gull (Address in Medicine, *Lancet* 2:171, 1868) had used the term "hysterie apepsia" to describe the same condition.

2. Lasègue E. C.: *On Hysterical Anorexia*, M. Times 2:265, 1873 (translated from Arch. gén. de méd., 1873)

3. Ryle, J. A.: *Anorexia Nervosa*, *Lancet* 2:893 (Oct. 17) 1936.

4. Sheldon, J. H.: *Anorexia Nervosa with Especial Reference to Physical Constitution*, *Lancet* 1:369 (Feb. 13) 1937.

5. Langdon-Brown, Walter: *Lancet* 1:473 (Feb. 20) 1937. Dunn, C. W., *ibid.* 1:723 (March 20) 1937.



At the time of admission her perceptions were a little slow and her memory defective. Emotionally she was fairly stable. On enquiry she stated that she had been worried and unhappy at home for the past six months and that this had contributed to her lessened intake of food. The only causes for worry that she would admit were the cessation of menstruation and the fact that her mother was "always fussing about her."

Under observation in the hospital, she showed considerable variability in mood. Most of the time she seemed content and cheerful, but there were days when she was depressed and uncommunicative. A hypochondriacal trend developed and she talked at great length about her digestive system. She said that she could not taste food properly and demanded an x-ray examination of her intestine because there seemed to be something wrong with the passage of food through it. She complained that she did not have the proper feeling when her bowels moved and asked that this be investigated. Under reassurance her appetite increased greatly and she commenced to eat ravenously and complained that no matter how much she ate she was never satisfied. On discharge from the hospital, February 23, her weight was 64½ pounds (29 Kg.) and basal metabolic rate —28 per cent.

The diagnosis lay between anorexia nervosa and acquired anterior pituitary deficiency. Despite the normal appearance

any time owing to ill health. There had been no gastrointestinal symptoms whatever. Menstruation had occurred normally every four weeks during this time. Her height was 4 feet 8¼ inches (142 cm.), weight 99½ pounds (45 Kg.), blood pressure 122 systolic, 84 diastolic. The patient stated that she realized that her former illness was the result of a desire on her part to have things her own way in the home. Her two sisters and a brother, all older than herself, were living at home and would order her about. When she was sick her mother became very anxious and would take her part, aiding her in getting her own way. The two sisters and brother are now married and living elsewhere. Her life at home has been quite congenial since they departed.

CASE 2.—D. K., a girl aged 18, first examined May 8, 1933, was in good health—weight about 108 pounds (49 Kg.)—until the autumn of 1932, when she was sent to boarding school. Her menstrual periods ceased at that time. Because of a coincident gradual increase in weight to 120 pounds (54 Kg.) she began to restrict her diet, avoiding carbohydrates and fats. Progressive loss of weight resulted. Her appetite remained good but she began to complain of epigastric fullness whenever she ate more than a small quantity of food. She tired easily and worried greatly about constipation, which she believed was responsible for her symptoms. In January 1933 she menstruated once but had not menstruated subsequently. Since February, worry about her condition had led to difficulty in sleeping.

The patient was very thin but otherwise well developed. Height 5 feet 4 inches (163 cm.), weight 91 pounds (41 Kg.), temperature 98.6 F., pulse rate 60 per minute, blood pressure 98 systolic, 70 diastolic. There was no anemia. Her hands were cold and reddish blue. The colon was palpable and tender. Enquiry showed that the patient had always been ambitious, sensitive and conscientious. She had done well at school and was working very hard because she dreaded mediocre standing. Her mother suffered with paralysis agitans and the patient tended to be depressed when at home.

A diagnosis of anorexia nervosa was made.

By June her weight had fallen to 88 pounds (40 Kg.). She took high standing in matriculation examinations and returned to her home in the country, refusing to be admitted to the hospital for more complete investigation and treatment. During the subsequent year at home her weight gradually went down to 70 pounds (32 Kg.). On investigation at another medical center in the summer of 1934 the basal metabolic rate was found to be —25 per cent; thyroid extract 1½ grain (0.1 Gm.) daily was prescribed. In the autumn of 1934 the patient entered the university and following this showed gradual improvement. By Christmas her weight had increased to 93 pounds (42 Kg.). When seen Jan. 31, 1935, her weight was 100 pounds (45 Kg.), she was eating well and she had menstruated a few weeks before. She is now married.

CASE 3.—R. V., a man aged 21, admitted to the hospital Dec. 3, 1933, was in his usual state of good health until June 1931, when he commenced to lose his appetite. Desire for food gradually decreased and was associated with progressive loss of weight and a feeling of fatigue. There were no other complaints apart from an occasional sensation of nausea. During the interval of two and a half years from the onset, his weight decreased from 153 pounds (69 Kg.) to 108 pounds (49 Kg.). The patient was not inclined to discuss his condition in detail and did not appear greatly concerned about it. He explained that he had often tried to eat larger quantities of food but had found that whenever he took more than a small amount he was troubled with epigastric fullness and nausea.

The patient was well developed but extremely emaciated and was in no apparent discomfort. His height was 5 feet 9 inches (175 cm.) and weight 101 pounds (46 Kg.). Hair distribution and secondary sex characteristics were normal for his age. The blood pressure was 95 systolic, 58 diastolic, the basal metabolic rate —25 per cent. His sugar tolerance curve was low and flat (table 1). There was no anemia. The pulse rate was from 64 to 85 per minute, the temperature from 97 to 98.6 F.

He had a good mentality; memory, perception and attention were not impaired. He was not depressed and appeared



Patient with anorexia nervosa, before and after treatment (Sir W. W. Gull, 1873).

of secondary sex characteristics and the normal distribution of body hair, the latter diagnosis was favored.

After discharge she was given injections of antuitrin 1 cc. intramuscularly twice a week, from March to July 1932. Her appetite continued to increase.

On readmission to the hospital for ten days in April she was found to be eating 3,400 calories each day. Her weight was 73 pounds (33 Kg.), the basal metabolic rate —16 per cent, the blood pressure 102 systolic, 52 diastolic. Her general appearance was much improved but she was still introspective and hypochondriacal.

Examination October 31, three months after antuitrin therapy was discontinued, showed a marked improvement in her mental attitude. The excessive desire for food had subsided and she was eating ordinary amounts. She was bright and agreeable and was taking part in games at school. She no longer displayed obsessions about her gastrointestinal tract. This improvement was maintained. Menstruation returned in November 1933 and was regular thereafter. Her weight in January 1934 was 86 pounds (39 Kg.), height 4 feet 8 inches (142 cm.), basal metabolic rate —5 per cent, blood pressure 112 systolic, 76 diastolic. Mentally and emotionally she appeared normal. In view of the continued improvement after cessation of endocrine therapy it was felt that a diagnosis of anterior pituitary insufficiency was untenable and that the diagnosis of anorexia nervosa was established.

The patient was seen again Feb. 19, 1938. She had been working in a factory for the past four years and had not missed

anxious to regain his health. Enquiry showed that he had always tended to be seclusive but, although he did not make friends easily, he never had difficulty in getting along with people. His parents and an older brother lived on a small farm. Two years previously the patient had been sent to a neighboring city to find work but he had not been successful. He made few friends and became dissatisfied with the idle life he was leading. He wished to return to the farm but his parents would not agree. The patient became worried about their attitude and jealous of his brother. It was at this time

The patient was assured that there was no organic disease and the nature of his symptoms was explained to him. A duodenal tube was passed and left in situ for thirteen weeks. Eight concentrated feedings of 260 calories each were administered at intervals of two hours daily. After his fear had been allayed that the stomach might be abnormally stretched, he showed steady improvement. In about two weeks' time he was encouraged to take nourishment by mouth as well as by tube. With the increase in food intake an irregular low grade fever developed and persisted for about two months.

TABLE 1.—Outline of Eight Cases

Case	Sex	Date	Age, Yrs.	Height	Weight, Lbs.	B. M. R. %	B. P.	Dextrose Tolerance Test, Mg. per 100 Cc.					Menses	Comment
								Fast.	½ Hr.	1 Hr.	2 Hr.	3 Hr.		
Case 1 E. L.	♀	1932 Feb. 12	15	4'6"	59	-37	82/50	69	93	171	178	165	Absent 5 mos.	Mentally bright; state of marked anxiety with hypochondriacal trend
		Feb. 20	..	.....	..	....	....	71	82	80	64	61		
		April 1933	..	.....	73	-16	102/52	...	...	...	...	...	Returned	Mentally and emotionally stable
		November 1934	..	.....	..	....	....	...	...	...	...	...		
		January 1938	..	4'5"	56	-5	112/76	...	...	...	...	...	Regular since Nov., 1933	Working steadily; feels and looks well
Case 2 D. K.	♀	February 1938	21	4'8½"	109½	....	122/84	...	...	...	...	...		
		1933 May	18	5'4"	91	....	95/70	...	...	...	...	...	Menstruated once in 8 mos.	Intellectual; sensitive and apprehensive
		June 1934	..	.....	85	....	....	...	...	...	...	...		
		August 1934	..	.....	72	-25	.....	...	...	...	...	...	Returned Dec. 1934; regular thereafter	
		January 1935	20	.....	100	....	....	...	...	...	...	...		
Case 3 R. V.	♂	1933 December	21	5'9"	101	-25	95/58	50	97	104	67	64	.....	Quiet and seclusive
		1934 March	..	.....	131	-10	100/60	110	114	143	102	80		
		July	..	.....	140	....	....	...	...	...	...	...		
Case 4 D. G.	♂	1934 Jan. 31	13	5'4"	75	-45	105/70	76	100	103	120	91	.....	Variability of mood; suspicious; obsessed regarding food
		Feb. 8	..	.....	78	-35	....	...	...	...	...	...		
		Feb. 17	..	.....	92	-27	....	73	67	105	80	80		
		March 31 1938	..	.....	94	-20	....	...	...	...	...	...		
		April 1938	17	5'11"	150	-8	....	...	...	...	...	...		
Case 5 M. A.	♀	1934 Sept. 27	16	5'3"	91	-28	95/60	68	132	181	207	220	Absent for 15 months	Intellectual, introspective and seclusive
		Oct. 6	..	.....	102½	-28	....	68	131	156	130	142		
		November 1936	..	.....	102½	-28	....	...	...	...	...	...		
		May 1936	..	5'3½"	150	-17	....	...	...	...	...	...	Returned early in 1936 Regular since returning	Nervous and easily upset; attending university; working hard
		May 1938	20	5'3¾"	139	-17	104/68	83	91	71	87	92		
Case 6 I. A.	♀	1935 November	25	5'11½"	69	-32	74/56	54	92	80	102	104	Absent for 7 years Still absent	Suspicious; uncooperative Working; domestic
		May 1938	27	.....	125	....	....	...	...	...	...	...		
Case 7 R. P.	♀	1936 March	21	5'3"	77	-26	104/70	82	114	118	95	88	Absent for 2 yr.	Variability of mood Emotionally unstable
		April 1938	..	.....	81	....	....	...	...	...	...	...		
		May 1938	..	.....	110	....	....	...	...	...	...	...	Still absent	More stable; feels well
Case 8 A. S.	♀	1937 February	23	5'3½"	69½	-18	80/58	134	148	...	...	124	Absent for 5 mos.; only 3 periods previous year Still absent	Intelligent; introspective; wilful; sensitive; refuses to cooperate
		May 1938	24	.....	59	....	112/60	...	...	...	...	...		

that he commenced to suffer from indigestion after meals, which consisted mainly of a feeling of fullness, and to get relief he gradually cut down on his food intake. He stated that prior to his illness he ate very large meals and frequently ate between meals. To this excess he attributed the gastric disturbances which resulted in his present illness. He stated that there had been no loss of appetite but that he had a constant fear of the discomfort which invariably followed eating even a moderate quantity of food.

He was referred to the hospital as having Simmonds' disease. Because of the lack of evidence of gross endocrine dysfunction and the presence of an obvious psychologic disorder, the extreme emaciation was believed to be due to anorexia nervosa.

Eight weeks after admission, his weight was 113½ pounds (51.5 Kg.), the basal metabolic rate -29 per cent. The patient stated that he felt much stronger and eagerly anticipated his meals. He was more talkative than on admission and was frequently seen chatting with the other patients in the ward. The dextrose tolerance curve had become more normal (table 1). When the duodenal tube was withdrawn the patient was eating a diet of 3,000 calories daily. His weight was 128 pounds (58 Kg.) and the basal metabolic rate was -6 per cent.

On discharge from the hospital, March 30, 1934, his weight was 131 pounds (59 Kg.), the basal metabolic rate -10 per cent. Mentally much improved, he regarded the future with optimism and was completely reassured regarding his digestive

disturbances. Information received July 25, 1934, indicated that he was well, weighed 140 pounds (63.5 Kg.) and was working happily on the farm.

CASE 4.—D. G., a boy aged 13, admitted to the hospital Jan. 24, 1934, was brought to the hospital by his parents because of loss of weight and a peculiar mental attitude toward food. He had developed normally until the spring of 1933, at which time he was a little heavier than most of his play fellows. The other boys called him "Tubby" and "Fat," which annoyed him greatly and resulted in several fist fights. He informed his parents that he was dieting to reduce weight. From that time on he took an abnormal interest in food. He talked about it constantly, with particular reference to the fat-producing ingredients of various dishes, and secretly took a "patent medicine" to aid in reducing. He would slip food into a paper bag between his knees during meals and afterward burn it in the furnace. It was noted that he would wipe the butter off his bread and put it on the under surface of the seat of his chair. Over the period of a year his weight decreased from 115 pounds (52 Kg.) to 79 pounds (36 Kg.). His parents stated that during this time he had become suspicious of people and would sneak around the house listening to conversations on the assumption that people were talking about him. He had become greatly interested in music, which previously had not interested him at all. His aunt stated that the boy would go into the woods alone and pray to become thin, and that he had expressed an idea that his bedroom was holy.

TABLE 2.—Effect of Administration of Desiccated Thyroid in Case 5

Date	Basal Metabolic Rate, %	Thyroid Medication
Sept. 6, 1934.....	-37	Desiccated thyroid, 1 gr. daily, Sept. 1933 to Sept. 24, 1934
Sept. 28, 1934.....	-25	Receiving no thyroid
Nov. 5, 1934.....	-23	Receiving no thyroid
Jan. 5, 1935.....	-30	Desiccated thyroid, 1 gr. daily, Nov. 11, 1934 to March 1935
Jan. 26, 1935.....	-34	
May 6, 1936.....	-17	Receiving no thyroid
Mar. 17, 1938.....	-17	Receiving no thyroid

Prior to his illness he had been healthy and strong, living happily with his parents and one older sister. He had done moderately well at school but preferred to stay at home and occupy himself with mechanical toys rather than play games with the other boys. His outside doctor had found his basal metabolic rate to be -39 per cent and for sixteen days prior to admission the patient had been receiving 1 grain (0.065 Gm.) of desiccated thyroid daily but had shown no improvement.

The patient was extremely emaciated; his height was 5 feet 4 inches (163 cm.), his weight 74½ pounds (34 Kg.). The secondary sex characteristics were normally developed for the age of the patient. There was no anemia. The basal metabolic rate was -45 per cent, the blood pressure 108 systolic, 70 diastolic, the pulse rate from 60 to 90 per minute, the temperature from 97 to 100 F. The sugar tolerance curve tended to be rather low (table 1).

It was ascertained that the father was an emotionally stable person with a good deal of understanding but that the mother was a highly strung, overly conscientious person who failed to take the boy's point of view into consideration and was constantly correcting him and endeavoring to make him conform to her standards. The patient had always been considered a nervous child, subject to impulses and full of short-lived enthusiasm for various interests. About two years previously his family moved to their present home in a different part of the city and, as the patient found difficulty in making friends in his new environment, he spent much time by himself. He stated that at first he intended to stop dieting when his weight fell to 100 pounds (45 Kg.) but that he found it impossible to do so. He admitted being influenced by the thought that if he lost much weight and became very thin he would attract a great deal of attention. As a result, he made a study of food values and stated that he became angry and suspicious of people who

tried to persuade him to eat the regular meals. In conversation he appeared to be bright and alert; memory, perception and attention showed no defects. He stated that the family, particularly his mother and sister, were against him and that they were ignoring him and leaving him at home rather than taking him to shows and other places of amusement. He had arrived at the conclusion that there was not much in life worth living for.

During his stay in the hospital the nature of the condition was explained to the boy and he rapidly accepted the fact that there was need for a greater food intake, but he went to the extreme and ate huge quantities of food, so that he vomited at times. His weight showed a progressive increase; twenty-four days after admission it had risen to 92 pounds (42 Kg.). The basal metabolic rate was then -27 per cent. With the greater intake of food there was a low-grade fever ranging up to 100 F., lasting three weeks. During the next five weeks the intake of food was more moderate and there was but little change in weight. On discharge from the hospital, nine weeks after admission, his weight was 94 pounds (43 Kg.) and his basal metabolic rate -29 per cent. It was arranged that he should be sent to a boarding school to get him away from the home environment. Improvement was uninterrupted and the patient did well at school, mixing with the other boys and showing no return of his former symptoms.

The diagnosis was between schizophrenia and anorexia nervosa. It was felt that the latter diagnosis was the more likely in view of the rapid response to treatment in the hospital away from the home environment.

The patient was seen April 11, 1938. He was feeling well and seemed active and happy. His height was 5 feet 11 inches (180 cm.), his weight 159 pounds (72 Kg.), the basal metabolic rate -8 per cent. He was then 17 years of age and normally developed.

CASE 5.—M. A., a girl aged 16, was admitted to the hospital Sept. 24, 1934, complaining of amenorrhea of eighteen months' duration. Menstruation had commenced at the age of 11 and had been essentially normal until twenty months previously, when, after being scanty for two successive periods, it ceased entirely. She said that she felt well but that her appetite had been poor and that she had suffered from constipation for several years. She had been taking 1 grain (0.065 Gm.) of desiccated thyroid daily for one year.

The patient was emaciated; her height was 5 feet 5 inches (165 cm.), weight 91 pounds (41 Kg.), blood pressure systolic 95, diastolic 60, basal metabolic rate -28 per cent, pulse rate from 45 to 70 per minute, temperature from 96 to 98 F. The dextrose tolerance curve rose from an initial low level of 68 mg. to a peak of 220 mg., reached at the end of three hours (table 1). Repeated a few days later, the curve was lower (table 1). A barium sulfate enema showed tonus and haustration of the colon lacking to a moderate degree throughout. There was no anemia but the white blood count was 2,400, lymphocytes 31 per cent.

It was ascertained on enquiry that the patient weighed 135 pounds (61 Kg.) at the age of 11 and became very self conscious about her weight. The other children called her "Fatty," which annoyed her and evidently provided a basis for her curtailment of food intake since that time. She had always been very intelligent but inclined to fantasy. From the age of 4 she would occupy her time writing poetry, sketching and reading. She was always at the head of her class at school. She admitted day-dreaming a great deal since the age of eleven and preferred solitude to the company of others. She stated that people annoyed her and that she found talking an effort. At various times she tried to increase her food intake, but this would result in a bloated feeling in the abdomen, which she attributed to constipation. Enquiry revealed that the constipation was associated with faulty habits and that she was relying on frequent laxatives. The patient stated that her home life was a happy one except for the attitude of her older sister, who was continually taunting her, making reference to the desirability of having a good figure and with this in view making a study of food values and diets. The sister was not fat and the patient thought her unreasonable to diet. The patient

said that she had become acutely conscious of what other people ate. It would worry her when thin people left food on their plates or when obese people ate large amounts. This became an obsession with her.

The diagnosis was anorexia nervosa.

While in the hospital she usually was optimistic and cheerful. She spent her time reading books on philosophy and doing fancy work. Constipation was quickly relieved by instruction in proper habits and administration of liquid petrolatum. She was given a diet of 2,500 calories daily with 10 units of insulin one-half hour before the midday and evening meals. No thyroid was administered while she was in the hospital. Soon she took most of the food offered and on discharge was taking approximately 2,300 calories a day. Her weight increased gradually to 102½ pounds (46.5 Kg.) over a period of eight weeks and her mental attitude steadily improved.

Following discharge from the hospital Nov. 10, 1934, she resumed thyroid therapy and took 1 grain (0.065 Gm.) of desiccated thyroid daily until March 1936. The failure of this treatment to affect the basal metabolic rate materially is shown in table 2. Seen in December 1935, she was in good spirits, eating well and weighed 119 pounds (54 Kg.), but the menses had not yet returned. In May 1936 she weighed 150 pounds (68 Kg.), having gained 24 pounds (11 Kg.) in two months. Thyroid had been discontinued five weeks previously. The basal metabolic rate was now -17 per cent, the temperature 97.6 F., the pulse rate 54 per minute. The menses returned at this time and have continued normally ever since.

At present (May 1938) she feels well but is inclined to be nervous and easily upset. She is attending the university, working hard and doing well in her studies. Her height is now 5 feet 5¾ inches (165 cm.), weight 139 pounds (63 Kg.), basal metabolic rate -17 per cent, blood pressure 104 systolic, 68 diastolic.

CASE 6.—I. A., a woman aged 25, admitted to the hospital Nov. 22, 1935, complained of loss of weight, strength and energy, with increasing fatigue during the previous year. For several months she had noted swelling of the lower extremities and abdomen and frequency of micturition, latterly associated with thirst. She had not menstruated since 17 years of age, at which time she weighed 102 pounds (46 Kg.), her greatest weight. She had always been a small eater and disliked many foods, which included those of high caloric value. Because of attacks of frequency of micturition her physician had placed her on a markedly restricted diet, to which she attributed the rapid loss of weight.

Her home conditions were bad, her family being on relief. She lived alone with a semi-invalid mother, her father and a sister having died in recent years. The patient did all the housework.

The patient was extremely emaciated and pale; her weight was 69 pounds (31 Kg.), her height 5 feet 1½ inches (155 cm.). The secondary sexual characteristics were normally developed; head and body hair were abundant. There was edema of the feet, legs and thighs, and slight puffiness around the eyes. The hair and skin were dry. The temperature was from 96 to 99.7 F., heart rate from 70 to 90 per minute, blood pressure 74 systolic, 56 diastolic, hemoglobin 52 per cent, red blood count 3,000,000, white blood count 2,600. The twenty-four hour output of urine was approximately 500 cc. daily, with specific gravity relatively fixed between 1.010 and 1.014. Albumin was present occasionally in small quantities. The non-protein nitrogen was 35 mg. per hundred cubic centimeters of blood, serum protein 3.5 per cent, the basal metabolic rate -32 per cent. The sugar tolerance curve was low and tended to be flat (table 1). Electrocardiogram, voltage 6 mm.

The diagnosis was anorexia nervosa. It was believed that the edema and anemia were secondary to prolonged malnutrition.

During the one week the patient remained in the hospital she was uncooperative, refusing to eat an adequate amount of food, and was resentful and complaining in her attitude toward her attendants and visitors. Finally she went home against advice. On readmission a few weeks later the edema was more marked and the mental attitude worse. Her weight was 75 pounds (34 Kg.), the increase believed to be due to edema. The

serum protein was 4.5 per cent. The average caloric intake for one week was about 1,100 calories a day. Again she went home against advice.

At present (May 1938) she is working as a domestic outside the city. Her mother believes that she is well. Her weight is now 125 pounds (57 Kg.). The menses are still absent.

CASE 7.—R. P., a woman aged 21, admitted to the Psychiatric Hospital March 31, 1936, complained that she could not eat, was tired all the time, and that she cried a great deal. She stated that at about 8 years of age she commenced to become stout. At 13 years she weighed 160 pounds (73 Kg.). Menstruation commenced at this time and was associated with considerable pain. The periods had never been very regular and stopped completely two years before admission. She became very conscious of her stoutness, especially of her large abdomen. Everybody teased her and called her "Fat." She had previously enjoyed swimming but about this time she noticed that her limbs felt numb and weak. She commenced to diet and from then onward lost weight. At the age of 16 she weighed 130 pounds (59 Kg.) but people continued to tease her. At 17 years of age she became nervously upset because of fear that she might fail in her matriculation examinations. Since that time she had been subject to nervous symptoms and had existed in a state of mild chronic ill health. About one year before admission to the hospital she commenced to cut down her food intake to a marked degree. She lost weight rapidly and became increasingly easily fatigued. Little things at home bothered her and she lost all interest in reading and knitting, which she had enjoyed formerly.

Examination was essentially negative, apart from the marked generalized emaciation. Secondary sexual characteristics were normally developed. Her weight on admission to the hospital was 77 pounds (35 Kg.), her height 5 feet 5 inches (165 cm.), the basal metabolic rate -26 per cent. The sugar tolerance curve was flat (table 1).

During her stay in the hospital the patient showed considerable variability in mood, at times displaying great apprehension and tearfulness and at other times being interested and cheerful. It was ascertained that there was a family background of religious fervor and that the mother was an emotionally unstable type of person and overly solicitous about the patient.

The diagnosis was anorexia nervosa.

The nature of her condition was explained to the patient and she was encouraged to eat an adequate diet. She cooperated well in this regard and engaged actively in occupational therapy. By April 14 her weight had increased to 81 pounds (37 Kg.). She was feeling much better and showed a decided improvement mentally. She was bright, enthusiastic and interested in her progress. However, she was anxious to leave the hospital and was discharged April 18 to go and stay with her sister-in-law. Information received May 1, 1936, indicated that the patient adjusted herself well after leaving the hospital and was eating fairly adequate meals. The improvement continued and in June 1938 it was ascertained that she was well and happy. She has been working for two months as a dress designer. She is well developed physically, weighs 110 pounds (50 Kg.) and is still gaining weight. The menses have not yet returned.

CASE 8.—S. A., an active alert, highly sensitive, wilful girl of 23, an only child, had fairly good health prior to 1934, at which time she weighed 112 pounds (51 Kg.). Rather unhappy at the university, she gradually lost to a weight of 94 pounds (43 Kg.) by the spring of 1936. She stated that during the preceding year the mistress of her boarding house had spread malicious tales about her carelessness of her health and refusal to eat. She felt this very keenly. Her appetite became worse and she began to vomit after eating without any associated nausea or discomfort. Her weight fell to 69 pounds (31 Kg.) by February 1937. The menses occurred three times in the year 1935-1936. She has not menstruated since September 1936.

In February 1937 she was emaciated, active, alert and intelligent and stated that she felt well. The secondary sexual characteristics were normally developed. The blood pressure was 80 systolic 58 diastolic, the basal metabolic rate -18 per cent, the fasting blood sugar 134 mg. per hundred cubic centimeters; the sugar tolerance curve was incomplete but appeared to be flat (table 1).

The diagnosis was anorexia nervosa.

The patient refused to come into the hospital. She went home, where she was unhappy, tried numerous types of therapy and is now worse than ever. Her own physician reports her weight to be 59 pounds (27 Kg.), her blood pressure 112 systolic, 60 diastolic. He states that, though she claims to be feeling better, she is extremely emaciated and looks sick. She refuses to come to Toronto, fearing that she may be kept in the hospital.

#### COMMENT

It would appear that anorexia nervosa occurs almost entirely in people of psychoneurotic constitution. Most of them are intelligent, some to a marked degree; all are highly sensitive. Usually they are impulsive, wilful, introspective and emotionally unstable, but these qualities may not be very obvious. Associated with a sense of inferiority, they have a strong desire for prominence and dominance. Usually they are alert and optimistic but are resentful of control on the part of their family. Prior to the onset of anorexia they are often good mixers but with its development they frequently become seclusive. In only two cases did we obtain a history of a psychotic trend dating from childhood.

In persons with such a temperament as a basis, prolonged emotional disturbance may precipitate the development of this peculiar syndrome, which appears most commonly in the unstable period of adolescence and early adult life. In most of our cases there was an underlying discontent as the result of a failure of adaptation to the domestic situation. In four patients (2, 4, 5 and 7) the taunts of companions about a conspicuous obesity led to a psychologic repugnance for food which became a fixed habit. In others (cases 1 and 3) a morbid concern about minor symptoms referable to the gastrointestinal tract gave rise to a fixed fear of eating. In none did an acute emotional crisis precipitate the onset of symptoms. In only one case (case 6) was there a suggestion that therapeutic dietary restriction was a factor in the development of the condition. The other seven cases were definitely of the primary type. In none of our cases did we find evidence of any organic disease which might have been responsible for the symptoms.

The anorexia was peculiar in that it was not a simple want of desire for food such as is characteristic of wasting diseases but rather a morbid aversion to eating. It might be based on an abnormal desire to become thin, a desire to attract attention or gain sympathy, or a fixed belief in the inability of the stomach to hold any quantity of food (case 3) or a fear that ingestion of food would cause distressing symptoms. After a time this morbid anorexia became the habitual anorexia of undernutrition and starvation. It is evident that the morbid anorexia is a manifestation of an underlying psychologic disorder. It should not be attributed to a secondary disturbance in function of the anterior lobe of the hypophysis or any other endocrine gland.

*Amenorrhea.*—In the six female patients, as well as in many others reported in the literature, amenorrhea was an early symptom. It was present usually before the anorexia became marked and always before emaciation was extreme. In four of our cases the menses returned when improvement in nutrition and sense of well-being became well established. Neither of the other two patients cooperated but one has improved definitely in other respects, the other not at all. In no case was amenorrhea associated with loss of secondary sexual characteristics; the breasts remained wonderfully well developed, and axillary and pubic hair persisted in

all. In reporting his fatal case, Lockhart<sup>6</sup> emphasized the fact that the breasts alone were not involved in the extreme generalized wasting. Libido is not grossly disturbed, although the state of chronic ill health may temporarily depress it. There is no atrophy of the external genitalia nor, as far as could be determined from examination, was there atrophy of other sexual organs.

It is generally recognized that change of environment and emotional disturbance may give rise to amenorrhea in apparently healthy young girls. Similarly, amenorrhea may be associated with many illnesses and with undernutrition<sup>4</sup> in the absence of any demonstrable endocrine lesion. In some females the cycle appears to be easily interrupted, but little is known about the mechanisms by which this disturbance is brought about. When there is no other evidence of sexual dysfunction, it seems unreasonable to attribute the amenorrhea of anorexia nervosa to a gross disturbance in function of the adenohypophysis.

*Low Basal Metabolism.*—In anorexia nervosa the basal metabolic rate is usually reduced, sometimes to very low levels. The reduction may be more apparent than real because of the inadequacy of normal standards for emaciated adolescents. The lowering of the basal rate is comparable to that observed in undernutrition from other causes and would appear to be secondary to the emaciation. In Simmonds' disease, on the other hand, the lowered rate, although aggravated by emaciation, is primarily the result of the underfunctioning of the thyroid gland secondary to pituitary insufficiency and, accordingly, it rises in response to thyroid therapy. In anorexia nervosa the basal metabolic rate rises toward normal with the improvement in nutrition, although not necessarily parallel to the gain in weight. It is notable that in two of our patients (4 and 5) treated with desiccated thyroid 1 grain (0.065 Gm.) daily there was no obvious effect on the basal metabolic rate and no improvement in their general condition (see table 2).

*Blood Sugar Level.*—The blood sugar tolerance curves obtained in seven of the eight cases tended to be of two different types. Beginning at a relatively low fasting level, the curve might rise gradually to a peak between 170 and 220 mg. per hundred cubic centimeters at the end of two or three hours, failing to fall to the fasting level, i. e., the type of curve seen in healthy patients who have been starved or given a high fat diet for a few days;<sup>7</sup> or it might be low and flat, as seen in healthy people who have been on a high carbohydrate diet or in some patient with chronic undernutrition,<sup>4</sup> e. g., nontropical sprue. The two types might be seen in the same patient within a short time. Since it was not possible to control the many factors that may alter the dextrose tolerance, it seems wiser not to attach too great significance to variation in the curve. The fasting blood sugar was below 68 mg. per hundred cubic centimeters only once: patient 5 suffered from prolonged undernutrition with low serum protein and some generalized edema. Other fasting blood sugar readings in her case were 78, 59 and 69 mg. per hundred cubic centimeters of blood. It is noteworthy that, although the fasting blood sugar level tends to be low in anorexia nervosa, the fall is not to be compared with that frequently seen in Simmonds' disease, Addison's disease

6. Lockhart, S.: Case of Anorexia Nervosa: Necropsy, *Lancet* 1: 31, 1895.

7. Sweeney, J. S.: Dietary Factors That Influence the Dextrose Tolerance Test, *Arch. Int. Med.* 40: 818 (Dec.) 1927.



or hyperinsulinism, nor do the patients suffer symptoms of hypoglycemia. It would seem probable that the variations in carbohydrate metabolism are secondary to chronic undernutrition.<sup>8</sup>

#### DIFFERENTIAL DIAGNOSIS

Patients suffering from wasting diseases such as tuberculosis or tumors of various kinds are usually quite ill, complain of weakness and fatigue and have obvious physical signs long before they reach the degree of emaciation seen in patients with anorexia nervosa. The latter patients are characteristically restless and active, even when emaciation is extreme, and commonly they will not admit being ill. Their alarmed relatives bring them to the physician but the patients protest that they feel well.

Addison's disease is usually differentiated with ease by the characteristic weakness, pigmentation, crises of nausea and vomiting, and low blood sodium. In both conditions the blood pressure may be low. In Addison's disease there is no related fundamental psychologic disturbance, the anorexia is not a constant feature, and often emaciation is a late symptom. In one instance, however, an erroneous diagnosis of anorexia nervosa was initially considered in an emaciated adolescent with pigmentation. This diagnosis was doubted because no adequate psychologic disturbance could be found to explain the anorexia and soon great fatigue and weakness with crises of nausea and vomiting pointed the way to a correct diagnosis of Addison's disease.

As a result of modern interest in the pituitary gland many cases presenting the picture of anorexia nervosa have been reported in the literature as cases of Simmonds' disease (extreme insufficiency of the anterior lobe of the pituitary gland). Superficially the syndromes closely resemble each other. In both, emaciation is a striking feature.<sup>9</sup> In both are found amenorrhea, lowered basal metabolic rate, altered sugar tolerance, low temperature and psychologic changes. On careful examination, one finds that the syndromes are fundamentally different.

Simmonds' disease occurs most commonly and most typically in adult women who have had several children and who have previously had ordinary good health. The disease usually begins in the puerperium after a difficult labor associated with sepsis, postpartum hemorrhage or some complication. It may occur also when the anterior lobe has been destroyed by tumor, granuloma or trauma. There is no underlying psychoneurotic constitution or any precipitating emotional cause. The syndrome of anorexia nervosa develops in adolescents and young adults and occasionally in older persons who have a psychoneurotic tendency. Precipitated by an emotional disturbance, it is cured by psychotherapy.

As already mentioned, the anorexia of anorexia nervosa is a morbid aversion to eating, whereas in Simmonds' disease there is loss of appetite unassociated with emotion. In both, emaciation develops and with emaciation comes the appearance of senility, which however tends to be more marked in Simmonds' disease. The amenorrhea of Simmonds' disease is associated with loss of sexual function, loss of secondary sexual characteristics, falling out of axillary and pubic hair, and atrophy of the sexual organs. It persists

unchanged in spite of therapy. In anorexia nervosa, amenorrhea occurs as a single symptom, important chiefly because of the concern it gives the patient and the patient's relatives, and not associated with other evidences of failure of sexual function.

The basal metabolic rate in Simmonds' disease is usually lower than in anorexia nervosa. Being due largely to underfunction of the thyroid gland, it responds more readily to the administration of small doses of thyroid than does the lowered rate of anorexia nervosa, which is secondary to emaciation. The blood sugar in Simmonds' disease is lower than in anorexia nervosa, and attacks of spontaneous hypoglycemia are common. In Simmonds' disease there is almost always anemia of moderate severity, which is unusual in anorexia nervosa.

Most striking is the difference in mental status. In Simmonds' disease the patient is dull and apathetic and shows intellectual impairment and usually gross changes in personality. In anorexia nervosa the patient is generally quick, alert, restless and intelligent but may become wilful, sensitive, impulsive and hysterical. Only in rare cases with gross psychotic manifestations does the mental state in anorexia nervosa in any way resemble that of Simmonds' disease.

The characteristic pathologic change in Simmonds' disease is an almost complete destruction of the anterior lobe of the pituitary gland with secondary atrophic changes in other endocrine glands, viscera and skin. There are few reports of postmortem examination in cases of anorexia nervosa and the description of the endocrine glands in these is incomplete.<sup>10</sup> The available data suggest that there is no characteristic change in the endocrine glands. This opinion is supported by the unpublished detailed observations in a recent fatal case that has been brought to our attention. If anorexia nervosa were a "functional Simmonds' disease" there should be characteristic secondary changes in gonads and other endocrine glands.

The improvement in cases of anorexia nervosa, reported as such or as Simmonds' disease, has often been ascribed to the effect of administration of various endocrine preparations: insulin, thyroid, various female sex hormones and various pituitary preparations. Improvement occurring after pituitary therapy has often been taken as evidence of the correctness of the diagnosis of pituitary insufficiency (case 1). Actually the use of such preparations may be an effective, but not the most desirable, method of psychotherapy.

#### TREATMENT

The aims of treatment are to change the attitude of the patient toward food so that emaciation will be relieved through the ingestion of an adequate diet and to insure permanent recovery by eradication of the underlying mental conflict. The former often can be attained by change of environment, encouragement and suggestion, but if the second objective is to be realized the psychologic basis must be discovered and remedied if possible. Prolonged psychotherapy is often necessary before the patient fully understands the true nature of his illness and especially the effect that various environmental factors, past and present, have had on its development. This understanding is essential if the patient is to become properly adjusted to those disturbing associations in his daily environment from which there is no escape.

8. Ross, C. W.: Anorexia Nervosa with Special Reference to the Carbohydrate Metabolism, *Lancet* 1:1041 (May 7) 1938. Sheldon, J. H., and Young, Frederick: On the Carbohydrate Metabolism in Anorexia Nervosa, *ibid.* 1:257 (Jan. 29) 1938.

9. It is true that emaciation may be lacking in Simmonds' disease, but this is exceptional.

10. Elliott, T. R.: Pathological Changes in the Adrenal Glands, *Quart. J. Med.* 8:47, 1914. Conybeare, J. J.: A Fatal Case of Anorexia Nervosa, *Guy's Hosp. Rep.* 80:30 (Jan.) 1930. Lockhart.

On commencing treatment it is desirable that the patient be removed to a hospital away from overly solicitous relatives and friends. Treatment in the public ward is to be preferred, because contact with other patients suffering from various organic diseases has a salutary effect on most patients with anorexia nervosa and makes the reassurance they receive more gratifying and significant. The well ordered routine of a hospital, the optimism of doctors and nurses and the evidence of recovery around them all have therapeutic value which, combined with freedom from the stress of their former environment, often results in rapid and striking improvement. To obtain the best results from psychotherapy it is essential that it be preceded by a most careful and thorough investigation of the patient. This is important both for the confidence it gives to the physician and for the reassurance of the patient. The life history of the patient should be obtained, with particular emphasis on his emotional reactions to his associates. The factors at the basis of the neurosis are sometimes quickly revealed, but often cooperation is imperfect and it is necessary to persevere in the search by questioning the patient's relatives and friends. Discussion should be continued until the patient understands clearly the connection between the psychologic maladjustment and the development of his symptoms.

The patient should be reassured with the utmost confidence that no organic basis for the symptoms exists and he should receive an explanation of the relationship between emotional disturbances and the imbalance of the autonomic nervous system which may result. The manner in which the stomach adapts itself to gradual and persistent lessening of the food intake should be explained so that the patient's apprehension over the feelings of fulness which occur when he tries to increase his intake can be allayed.

The patient should be encouraged to eat, at frequent intervals, small but gradually increasing quantities of food of high caloric value. The caloric intake should be carefully calculated daily, and praise and encouragement given with each increase that occurs. When about 3,000 calories is being taken daily and gain in weight is evident, the frequency of the meals can be gradually lessened and the variety of food increased.

In some cases feeding by duodenal tube may be necessary in the early stages of treatment but usually the method outlined is all that is required. Insulin to stimulate the appetite should not be used except as a last resort. Similarly, nonspecific endocrine therapy should be avoided, because permanent results are more likely to be obtained if no artificial aids are employed.

During the patient's stay in the hospital every effort should be made to divert his thoughts from his obsession. The public ward is obviously more effective than a private room for this purpose. Occupational therapy is of great assistance, particularly if the hospital has a workshop available where skilful therapists may introduce a spirit of friendly competition with certain other patients in some work or game. By this means a feeling of achievement may be engendered which will go far to restore the confidence these patients need so badly and thus facilitate recovery.

#### SUMMARY

The eight cases of anorexia nervosa that we have reported present the typical syndrome of emaciation, amenorrhea, low basal metabolic rate, low blood pressure and often rather low fasting blood sugar values

with flat sugar tolerance curve. Although the syndrome bears a superficial resemblance to that of Simmonds' disease, it is actually quite distinct and different.

The syndrome of anorexia nervosa develops as a result of an underlying mental conflict and appears usually in the unstable period of adolescence, most commonly in intelligent girls whose emotional constitution and autonomic nervous control are unstable.

These patients respond well to proper psychotherapy. If the cooperation of the patient and the family can be obtained, cures should be effected for all patients placed in a suitable environment with the exception of those who have serious mental disease.

There is no specific endocrine therapy for this condition, but these patients being of a hysterical nature will often respond temporarily to the suggestion that goes with confident administration of a special extract. Actually such treatment should be avoided because permanent results are more likely to be obtained if no artificial aids are employed.

100 College Street.

### *Clinical Notes, Suggestions and New Instruments*

#### UNDULANT FEVER TREATED WITH SULFANILAMIDE

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Sulfanilamide was originally found successful in the treatment of infection produced by gram-positive organisms. It is also effective in controlling infections due to gram-negative bacteria.

Berger and Schnetz<sup>1</sup> used it in the management of brucellosis. Stern and Blake<sup>2</sup> report three cases in which cure resulted with the drug. They were apparently unaware of its previous use in brucellosis, since they gave no bibliography. Working independently, we had found it beneficial in two cases of undulant fever. Our report, submitted to THE JOURNAL in January 1938, was rejected and returned in April. Sulfanilamide was furnished to us by the Winthrop Chemical Company.

CASE 1.—H. K. worked in the stockyards as a truck driver, handling both raw pork and beef. He entered Cook County Hospital in April 1937. Before admission he had been sick three weeks with chills, fever, sweating, generalized aching and weakness. His temperature continued to fluctuate between 98 F. in the early morning and 103 F. in the afternoon in the hospital as it had at home. The leukocytes numbered 6,800. The spleen was palpable. The Widal reaction was negative. Cultures of the blood and urine gave negative results. On admission his serum agglutinated the bovine and porcine forms of *Brucella melitensis* through 1:320 on the slide and above 1:1,280 in the test tube.

Stock vaccines of the porcine and bovine forms of *Brucella melitensis* were given twice a week for three weeks without benefit. Three weeks later sulfanilamide was started. Twenty-four hours after he received eight tablets his afternoon temperature was lowered and after forty-eight hours it was normal and remained so. The sulfanilamide was stopped one week later. During his remaining stay of one month his temperature did not exceed normal. He regained strength and appetite. He has remained well.

CASE 2.—A woman aged 69 became ill in Florida with chilliness and fever but no rigors. Periods of fever, interrupted by intervals of normal temperature, continued for eight weeks. During this period her weight decreased from 125 pounds to 65 pounds (56.7 to 29.5 Kg.). She had wandering pains in the

1. Berger, W., and Schnetz, H.: *Prontosil in Abortus Infectiones*. Med. Klin. 33: 594 (April 30) 1937.  
2. Stern, R. L., and Blake, V. W.: *Undulant Fever: Its Treatment with Sulfanilamide*, J. A. M. A. 110: 1550 (May 7) 1938.

joints. The hemoglobin content decreased to 50 per cent, the red blood cells to 2,500,000 and the leukocytes numbered 3,000. The sedimentation rate was rapid. Repeated searching yielded no plasmodia. There were no intestinal parasites. *Brucella melitensis* bovinum was isolated from the blood and her serum in a dilution of 1:15,000 rapidly agglutinated *Brucella melitensis*. At the end of eight weeks she was jaundiced and went into a stupor. She had a blood transfusion at this point, and 30 grains (2 Gm.) of sulfanilamide (prontylin) was given daily. Within forty-eight hours she was free of fever. She has remained afebrile to this date, twelve months later.

Sulfanilamide effected prompt and apparently permanent cures in two patients with brucellosis.

629 South Wood Street—715 Lake Street.

#### TICK PARALYSIS DUE TO THE BITE OF THE AMERICAN DOG TICK

REPORT OF A CASE OBSERVED IN GEORGIA

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Until recently little attention had been paid to a type of ascending paralysis of the flaccid type caused by the bite of certain ticks. The disease has been observed in children and in the young of animals, especially sheep and dogs. Adult human beings and mature animals are rarely afflicted.

The literature contains several excellent works on the condition from which the symptoms and the course of the disease in man can be studied.<sup>1</sup> Premonitory symptoms such as paresthesias, pain in the legs, dizziness, restlessness and general malaise may or may not be present. They may precede the paralysis by several days. The onset of the paralysis is characterized by its sudden appearance and rapid progress. Muscular weakness and asynergia appear first, followed in a few hours by more or less complete flaccid paralysis beginning in the lower extremities and extending upward, involving the arms and the neck. Speech and deglutition become difficult, the pupils dilate and in untreated cases death from respiratory paralysis supervenes.

The diagnosis is made from the clinical symptoms and the finding of an engorged female tick on the patient's body, most commonly on the scalp. Early removal of the tick is followed by rapid recovery, which is usually complete within three days. Failure to remove the tick or delayed removal leads in most if not all cases to a fatal termination.

Laboratory experiments<sup>2</sup> suggest that the disease is not caused by a living virus but by a venom which is elaborated in the developing ova of the impregnated female tick. Tick paralysis in children has been reported from Montana, Idaho, Washington, Oregon, Wyoming and British Columbia. Most cases occur in the spring and early part of the summer.

The tick responsible for all human cases reported in the United States and Canada is *Dermacentor andersoni* Stiles, the Rocky Mountain wood tick. This tick has attracted widespread attention as a vector of Rocky Mountain spotted fever, tularemia, relapsing fever and probably Colorado tick fever. Paraly-

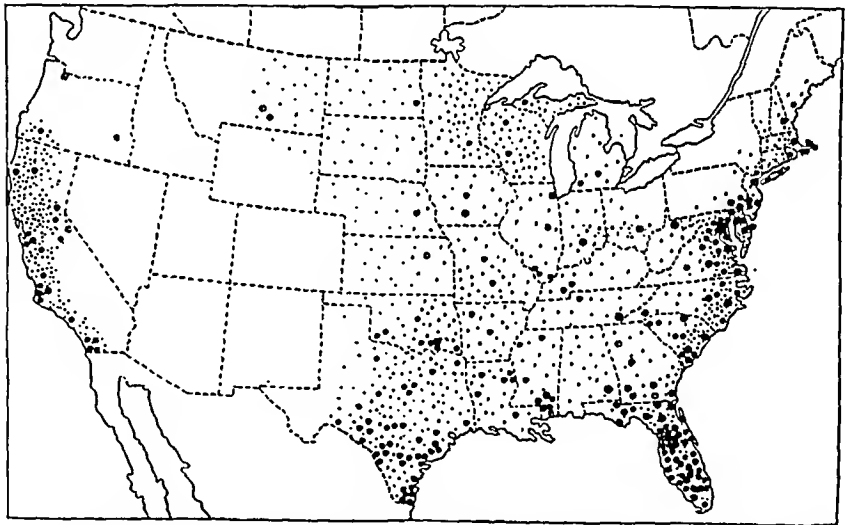
sis seems to occur only after the impregnated female tick has fed for several days on a patient. Detailed information on ticks and tick-borne diseases may be found in a recent article by Parker and his associates.<sup>3</sup> A similar disease in man caused by a different species of ticks, *Ixodes holocyclus*, has been reported from Australia.<sup>4</sup> Tick paralysis in sheep, caused by *Ixodes pilosus* Koch, has long been known in South Africa.<sup>5</sup> Recently, cases of paralysis in young dogs following the bite of *Dermacentor variabilis* Say, the American dog tick, have been observed in the eastern section of the United States.<sup>6</sup> It is remarkable that ticks are common in many regions from which cases of tick paralysis have never been reported.<sup>7</sup>

We are reporting this case of tick paralysis for two reasons: 1. This case was observed in Georgia. No cases east of Wyoming have been reported previously. 2. Recovery followed the removal of *Dermacentor variabilis*, a tick which has not been known to cause paralysis in children.

#### REPORT OF CASE

A white girl aged 9 years of Hepzibah, Ga., was first seen in the emergency room of the University Hospital June 19, 1938, at noon. The mother related the following history: The birth and development of the child were normal. She had whooping cough at the age of 9 months and scarlet fever at the age of 7 years. The parents and four other children were in good health. One of the children had had infantile paralysis several years before.

During the past week the patient had been complaining of feeling weak. On awakening on the morning of admission she was unable to get out of bed and complained of pain in the



Distribution of *Dermacentor variabilis* in the United States. Large dots indicate localities where collections were made by the Bureau of Entomology and Plant Quarantine; small dots indicate the probable range. (Reproduced from Bishop and Smith.<sup>6</sup>)

left thigh. She was carried to the breakfast table. There it was noticed that the arms moved in an incoordinate manner. She was unable to feed herself, and her left hand dropped into a bowl of hot food. She sustained a burn on the wrist but did not seem to experience any pain.

On admission the child appeared acutely ill. The temperature was 100.6 F. There was flaccid paralysis of both legs with absence of the tendon reflexes. The arms were weak and showed marked asynergia. The biceps and triceps reflexes were present. There was no difficulty in swallowing but the speech was thick and drawing. The eyes showed marked lateral and vertical nystagmus. The pupils were normal in size and reacted promptly to light.

From the Department of Pediatrics, University of Georgia School of Medicine, and the University Hospital.

1. Temple, I. U.: *M. Sentinel* 20: 509, 1912. Nuttall, G. H. F.: *Parasitology* 7: 95, 1914. Todd, J. L.: *Canad. M. A. J.* 4: 825, 1914; *ibid.* 9: 994 (Nov.) 1919. Bishop, F. C., and King, W. V.: *J. Econom. Entomol.* 6: 200, 1913. Hawden, S.: *Parasitology* 6: 298, 1913. McCornack, P. D.: *Paralysis in Children Due to the Bite of Wood Ticks*, *J. A. M. A.* 77: 260 (July 23) 1921. Barnett, E. J.: *Wood Tick Paralysis in Children*, *ibid.* 109: 846 (Sept. 11) 1937.
2. Regendanz, P., and Reichenow, E.: *Arch. f. Schiffs- u. Tropenhyg.* 35: 255 (May) 1931.

3. Parker, R. R.; Philip, C. B.; Davis, G. E., and Cooley, R. A.: *J. Econ. Entomol.* 30: 51, 1937.

4. Strickland, C.: *Parasitology* 7: 379, 1914.
5. Northwick: *Vet. J., London* 61: 33, 1905 (cited from McCornack).
6. Bishop, F. C., and Smith, C. N.: *Circular* 478, U. S. Dept. of Agriculture, 1937.
7. Barnett,<sup>1</sup> Parker, Philip, Davis and Cooley.<sup>2</sup>

Poliomyelitis or polienccephalitis was suspected and a diagnostic spinal puncture was performed. Clear fluid was obtained under pressure of 10 mm. of mercury.

Examination of the spinal fluid showed cell count 3, negative Pandy and Ross-Jones tests, total protein 50 mg. per hundred cubic centimeters, colloidal gold test 0000000000, and the Wassermann and Kahn reactions were negative. Cultures yielded no growth.

Analysis of the blood revealed red blood cells 4,800,000, hemoglobin 82 per cent, white blood cells 8,400, differential count: polymorphonuclears 72 per cent, eosinophils 0, basophils 0, lymphocytes 28 per cent, monocytes 0.

Urinalysis showed albumin none, sugar none, acetone none; microscopic examination revealed from 15 to 20 white blood cells per low power field.

Examination of the stool gave negative results for blood, parasites and ova.

The Wassermann, the tuberculin and the Schick test all gave negative results.

Soon after admission two ticks were found attached to the scalp in the parietal region. One of these was markedly engorged. They were carefully removed. The presence of the ticks had not been noticed by the patient or her parents, although a large ecchymotic area was present at the point of attachment. The diagnosis of tick paralysis was now made and the further course of the illness seemed to justify the diagnosis.

The ticks were identified as *Dermacentor variabilis* Say.<sup>8</sup> The large engorged tick was a female, the smaller one a male.

At 6 p.m. the patient showed considerable improvement. The speech had become almost normal. Ataxia of the arms and legs was now the prominent symptom, while muscular strength had greatly improved. Further improvement was evident the next morning. The knee and ankle reflexes had returned and the patient was able to stand unsupported. Walking was still difficult and the Romberg sign was markedly positive.

On June 23 another tick was found on the scalp and was removed. This tick was a female which did not show any signs of engorgement. At this time the patient appeared almost normal. Recovery was complete June 24, and the patient was allowed to leave the hospital. The last symptom to disappear was some slight difficulty in walking, which seemed to be caused by ataxia rather than by muscular weakness.

#### COMMENT

The clinical symptoms, the finding of the ticks and the rapid recovery following the removal of the ticks seem to establish the diagnosis beyond doubt. We believe that this case is of considerable interest. The American dog tick is a common parasite which is widely distributed in the eastern parts of the United States, as shown in the chart. It frequently attacks man.<sup>6</sup> Since the tick is known to cause paralysis in dogs, it is a priori probable that it can also cause paralysis in children. Similar cases may have occurred in other states but not been recognized, since the disease may easily be mistaken for other types of paralysis, poliomyelitis or polienccephalitis. The importance of diagnosing the condition is obvious since the outcome depends on the early removal of the ticks.

#### SUMMARY AND CONCLUSIONS

1. A case of tick paralysis in a 9 year old girl was observed in Augusta, Ga. Rapid recovery followed the removal of a male and an engorged female dog tick.

2. Tick paralysis in a child caused by the American dog tick has not previously been reported.

3. The American dog tick is a common parasite in many parts of the United States. It is suspected that other cases have occurred which have been mistaken for infantile paralysis.

8. Dr. E. H. Ewing from the Division of Insect Identification, Department of Agriculture, Washington, D. C., and Dr. R. C. Dienst from this school identified the ticks, and Dr. E. C. Cushing, Department of Agriculture, and Dr. R. R. Parker, director, of the Rocky Mountain Laboratory, U. S. Public Health Service, Hamilton, Mont., contributed valuable information.

## Special Clinical Article

### MENTAL HYGIENE AS RELATED TO THE PSYCHONEUROSES

CLINICAL LECTURE AT SAN FRANCISCO  
SESSION

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Mental hygiene is now accepted not as a theory of human behavior, as erroneously referred to by many in the early days of its development, but as a movement, in a broad sense, for improving the care and treatment of the mentally ill, preventing mental disorder and preserving mental health. With these crystallized purposes it had its inception in this country in 1908 at the organization of the Connecticut Society for Mental Hygiene by Mr. Clifford W. Beers. In the following year Mr. Beers founded the National Committee for Mental Hygiene, of which he became the first secretary, which position he has held continuously up to the present time. Many are familiar with the colorful life of Mr. Beers and his outstanding achievement in having been able to enlist and hold the interest and support of numerous influential citizens of America, both lay and professional. Among the latter are such names as August Hoch, Frederic Peterson, Levellys F. Barker, the late Drs. William H. Welch and William Alanson White, and perhaps the most prominent of those still living and actively interested, Dr. Adolph Meyer, the acknowledged dean of psychiatry of the present generation. These, along with many prominent laymen of large means and succeeding groups of professional people, have given either substantial amounts of money or technical counsel in the initiation and development of a movement which has grown into one of the most valuable agencies for human welfare.

The early interests of the National Committee for Mental Hygiene were centered on the improvement of the care and treatment of the mentally ill in public hospitals. Numerous surveys were made of the physical equipment and treatment facilities of such institutions in various states, and recommendations followed which brought about reforms of inestimable value. This influence gradually extended to private hospitals for the care of the mentally ill, with corresponding improvement of service in these hospitals. Then followed the development of agencies for the ostensible purpose of preventing mental disorders, both in the form of mobile clinics in connection with various state hospitals and in the establishment of psychologic and psychiatric examinations of children in public schools and the outpatient departments of general hospitals. Much of this early pioneer work had been accepted as valuable, and in order to help various communities achieve their purpose in a preventive program the Commonwealth Fund in 1922, under the guidance of the National Committee for Mental Hygiene, established demonstration child guidance clinics in seven of the largest cities. Within six years thereafter more than 500 mental hygiene clinics had been organized in this country, and on Jan. 1, 1936, according to the Directory of Psychiatric

Read in the General Scientific Meetings at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 13, 1938.

Clinics published by Dr. George S. Stevenson,<sup>1</sup> director of the Division on Community Clinics, there were in thirty-nine states 684 clinics of this type, supported either by private or by public funds, including those associated with medical schools and outpatient departments of general hospitals.

The emphasis, in the early days of child guidance clinics, was on the prevention of mental illness and delinquency, by personality studies and educational measures, in order to forestall later hospitalization or penalization. More recently there has been a shift of emphasis from the thought of future psychoses or criminal careers to the need of psychiatric attention for the child's own sake, in an effort to enhance his feeling of security and to obtain for him a better social adjustment. In line with this later and present day trend, attention is quite naturally directed to that tenet of the mental hygiene movement which embraces one of its most practical phases, the preservation of mental health. While the prevention of mental illness and the preservation of mental health may appear, on the surface, to be synonymous, one can never know just how much has been accomplished by so-called methods of prevention, owing to the belief that there are so many obscure and deep seated forces at play which may act as predisposing factors in the production of mental illness, especially the major forms of maladjustment, usually designated as psychoses. I have in mind, particularly, the inescapable influences of heredity and constitutional predisposition which affect the lives of all persons in their mental and emotional adjustments and which have been transmitted not solely from the immediate ancestors but from those of many preceding generations. The total personality makeup may therefore be thought of not only as that which has been built up and organized in the process of development of the individual but as an outgrowth of his historical past, as well.

When we come to the precipitating circumstances of mental illness, nearly all psychiatrists are in agreement that their concepts are somewhat more tenable. Herein lies their greater hope, by the improvement of methods of diagnosis and the application of special skills in treatment to the degree that, in at least a fair but unknown percentage of cases, major psychotic manifestations may be actually forestalled. These are worth while and laudable concepts and constitute a goal toward which all of us strive. They are the foundations of much of the mental hygiene movement.

#### THE PSYCHONEUROSES

Thus far I have discussed in a general way some of the broader purposes of the mental hygiene movement and now come to that phase of the subject more specifically related to the title announced; namely, a consideration of the psychoneuroses. For purposes of convenience and relative simplicity, a psychoneurosis may be defined as a condition in which an individual reacts to an unhappy or threatening situation by a group of symptoms which have an instinctive basis and which are manifested in the form of various escape and defense reactions distinctly different from those of the general population who are, at least for the time being, sufficiently integrated in their personality makeup that they can face similar situations more frankly than one suffering from a psychoneurosis is capable of doing. The one has a tendency to regress to a primitive or

infantile type of behavior, governed by an instinctive drive, and the other to act on a more rational basis. The former does not, however, have a type of behavior that is incompatible with sanity and responsibility, and such an individual is usually in sufficient contact with reality that he is thought of by his associates as being essentially normal.

In most textbooks on psychiatry there is a tendency to include all neuroses and psychoneuroses under the general classification of the latter, whereas those who have approached a study of these borderline states of maladjustment from the psychoanalytic point of view have designated the neuroses as the more inclusive term. Their classification has been favorably received by many psychiatrists and neurologists who have endeavored to obtain a better understanding of the origin of the mental mechanisms that underlie the symptom formation in this large group of cases, although many of them, as well as myself, have not attempted to use formal psychoanalysis as a therapeutic procedure. Wechsler,<sup>2</sup> who has compressed the principles of the latter classification into a few simple paragraphs, makes the following statement:

Freud divides the neuroses into Actual Neuroses and Psychoneuroses. By the former he means those neuroses in which, aside from the immediate or precipitating psychologic factor, there is actual, even if temporary, physical disturbance within the organism. In this group he includes anxiety neurosis, neurasthenia and hypochondria. Traumatic neurosis may possibly be added. By psychoneuroses he understands those neuroses which illustrate the various stages of regression to infantile points of fixation. The whole group is, therefore, known as Regression or Fixation Neuroses. Under this head are classed the Transference Neuroses, which include conversion hysteria, anxiety hysteria and compulsion neurosis.

It is furthermore stated that in the present state of our knowledge it is impossible to make a rigid classification on account of the difficulty of defining what is normal and that clinical observation reveals that mixed neuroses are extremely common. One does not always see pure anxiety or conversion hysteria, pure anxiety neuroses, pure compulsions and the like but conditions in which there is a little of each. Elaborating a step further, it is noted that the same mental processes are observed in the socially well adapted person as in the maladjusted neurotic. It can therefore be agreed that every normal person is a little neurotic and that every neurotic person is very much normal. It is only in the degree of variation in the conduct of individuals under similar social and other environmental influences that the need of investigating the motivation of psychobiologic processes may arise to account for what might be looked on, in a particular person, as neurotic behavior.

#### UNDERLYING FACTORS

Much knowledge regarding the underlying factors of neurotic behavior has been gained from the study of primitive people and children and from the behavior of animals. In fact, reactions of escape and defense are observed in the lower forms of animal life, striking examples of which are related by Ernst Kretschmer<sup>3</sup> of Marburg in his discussion of hysteria, as follows:

If a swimming infusorian approaches a zone of heated water, it reacts with an overproduction of lively motions which continue until one of them takes it away from the dangerous area.

1. Stevenson, G. S.: *Directory of Psychiatry Clinics in the United States*, 1936, *Ment. Hyg.* 20: 66 (Jan.) 1936.

2. Wechsler, I. S.: *Clinical Neurology*, Philadelphia, W. B. Saunders Company, 1928.

3. Kretschmer, Ernst: *Hysteria*, Monograph 44, Washington, D. C., Nervous & Mental Disease Publishing Co., 1926.



whereupon it quietly swims away. If a bee or a bird is caught in a room, it will neither sit in one corner and deliberate, nor will it methodically examine the doors and windows for an opening, but, instinctively directed toward light, will release a violence of sprawling, fluttering, aimless to and fro jerky motions which are spasmodically repeated until one of them by chance carries it through an open window into freedom, after which the usual motions of flying are at once resumed.

Such methods of escape mechanism are referred to by Kretschmer as violent-motor-reaction. In living beings, it is stated, the violent-motor-reaction is a typical reaction to situations which threaten the course of life. It is a spontaneous reaction of biologic adaptation. In the course of evolution this type of reaction as a biologic defense mechanism assumes a place of relatively less importance. More expedient forms cover over the older reaction type. In apes there is a beginning of systematic search and deliberation, a more quiet and less motor type of reaction. In adult human beings, selective voluntary action becomes more noticeable, and only under conditions of peculiar stress will the violent-motor-reaction be observed. In cases of panic, for instance such as in an earthquake, a crowd of people will behave very much like an imprisoned bird. If among the many motions initiated there is one which by chance will take a person away from the danger zone, quiet at once ensues; the violent-motor-reaction has attained its purpose. The individual has achieved a gain through his biologic adaptation to a threatening situation.

Another group of instinctive reactions occurring in the lower forms of animal life, which exemplify a defense mechanism against threatening situations, has been referred to by Kretschmer as the sham-death-reflex. This is thought to have a close relationship to cataleptic and hypnoidal states. He refers to the work of Babak,<sup>4</sup> who has done much research on fish, especially callichthys, and who illustrates the hypnoidal process, or sham-death-reflex, as follows:

If startled, the animal almost instantly changes from a black to a whitish or reddish color, rapidly moves his pectoral fins and, instead of fleeing, throws himself upon one side and remains in that position. In addition, there appears a certain amount of rigidity, the fins are spread, and the gill movements cease for a time. The animal may remain motionless for a quarter of an hour or more, and, to arouse it, one must often shake the animal strongly or push it farther under the water, whereupon the normal swimming movements will usually follow.

It is stated that similar reactions may be traced and studied all through the animal series. Kretschmer believes it is significant that this "animal hypnosis" prefers the same situations around which hysterical reactions in man are most frequently grouped; namely, danger to life and the business of reproduction. In the service of reproduction, he states, are seen examples of reflex immobility very well demonstrated in chickens.

Through the few examples that have been given, I have called attention to some of the biologic principles which underlie the formation of escape and defense reactions in the presence of threatening situations and briefly referred to the fact that, in adult human beings, selective voluntary action becomes more noticeable with the intricate and elaborate development of a personality makeup. More useful and expedient formations cover over the older reaction types. Through them all, however, is seen a similar tendency of the living organism to act in unusual or extraordinary ways in times of

stress. There is always a purpose to be fulfilled, whether it is instinctive and unconscious or in the twilight zone of consciousness and rationality. Such purpose is, at least, of temporary advantage both to the lower animals and to human beings. In the latter it is referred to as a neurotic reaction, and in most instances is a defense against or a flight from an unhappy inner experience.

The commonly designated pleasure-pain principle of analytic psychology means that all of us, either consciously or unconsciously, endeavor to seek that which is pleasurable and avoid that which is painful. In our effort to escape the painful and still preserve our self esteem, however, many unhappy inner experiences are sometimes relegated to the realm of the unconscious and deposited there as if they had never existed. Some of these which may, for months or even years, appear to have been permanently forgotten are surcharged with such emotional content, however, that an outlet is inevitable, and they will escape either in the form of disguised and distorted dreams or through neurotic and psychotic reactions. In other words, there is always present the instinctive or unconscious tendency to escape from the painful experiences of reality in times of stress. In lower animals this is exhibited in excessive activity of the pristine motor system, in the form either of violent-motor-reaction or of the sham-death-reflex; in human beings, by more highly developed, yet not dissimilar, psychobiologic reactions which have a definite, and sometimes dramatic, purpose in keeping the individual out of the zone of danger. From the psychiatric standpoint, a danger zone may be thought of briefly as a situation in which there is evidence of persistent emotional conflict, based on a deep seated anxiety and inadequate adjustment thereto, which threatens to carry a major portion of the human personality beyond the realm of conscious reality.

Repressed anxiety, which is the essential factor in the symptom formation of all the psychoneuroses, is usually the result of an unconscious sense of guilt, sometimes, though not always, based on a preexisting feeling of hatred or bitterness toward an individual or situation, secondary to the frustration of some selfish desire. Such anxiety is therefore closely related to unhappy inner experiences already referred to. Although repressed, anxiety never lies completely dormant and constantly craves some method of expression. If not released in psychomotor restlessness or similar forms of exaggerated emotional response, other avenues of escape will inevitably ensue. It may, by transference, appear in the form of various motor and sensory disturbances closely simulating organic disease and thus produce such somatic symptoms as will satisfy the self esteem of its host until other and more rational outlets are available. Anxiety has for the time being been converted into psychoneurotic symptoms which give at least partial relief of the inner tension and have therefore been of psychobiologic value to the individual. In fact, it is now believed by some that the development of a psychoneurosis may in many instances actually forestall the onset of a frank psychosis or even be the means of escape from suicidal impulses. I do not wish to give the impression of putting a premium on the psychoneuroses but offer no apology for calling attention to some of the benign characteristics of these disorders which, in their compensatory formations, have a tendency to preserve the integrity of the personality, an essential requisite of mental health.

4. Babak: Arch. f. d. ges. Physiol., 1917.

## NEUROTIC TENDENCIES IN CHILDHOOD

Clinical statistics are not thus far easily available to show with any degree of accuracy what percentage of psychoneuroses in adults is an outgrowth of neurotic tendencies in childhood, since it is known that child guidance clinics in this country were not fully established on a broad scale in the larger cities until the end of the third decade of the present century. About the middle of the previous century, however, a London physician by the name of John Elliotson<sup>5</sup> published articles on functional nervous diseases of childhood, pointing out that much that passed for naughtiness was indeed illness and that many children who showed anti-social tendencies were sick children whose place was in a hospital rather than in a reformatory. In the latter part of that century there was a still further development in the knowledge of nervous diseases, especially in Europe, and it was Sigmund Freud<sup>6</sup> of Vienna who threw more light on these disorders in childhood. It was perhaps he who first called attention to the fact that the roots of functional nervous disorders of adults could be traced back to early years, when definite nervous symptoms had disturbed the life of the patient, although they had usually remained unrecognized by those attending the child. We are furthermore equally indebted to Pierre Janet<sup>7</sup> of Paris for much of our knowledge of the principles which underlie the symptom formation of the psychoneuroses, especially in adults.

There has been some objection to the use of the term "neurotic child" on the ground that it is too general and vague and that it is used to denote widely divergent types of nervous disease. An effort to soften the term to "the problem child," "the difficult child," "the mal-adjusted child" removes the idea of illness still further, however, from the thoughts of those who have such children in their care and fosters a belief that the abnormalities displayed are evidences of temperamental awkwardness or social incompatibility. There are such traits, of course, but they are symptoms rather than the disease itself. A more valid objection to the word "neurotic" is that damage may arise from a too free use of the term. It has, aside from its medical sense, a popular use as an epithet of disdain. Parents may therefore resent the term, and even physicians are sometimes inclined to dismiss such a case as one for which there is nothing particular to prescribe except bromide, diet or fresh air. Many are still inclined to labor under the old misconception that "neurotic" means undisciplined, uncontrolled, naughty or badly brought up and to believe that if only the wayward child could be brought to see the error of its ways, and the parents taught to manage its education more skilfully, the problem would be adequately solved. It is becoming increasingly obvious, through the influence of the mental hygiene movement, that the treatment of nervous disorders in childhood is not so simple as that.

We sometimes hear the twentieth century referred to as the century of the child, and there is much justification for the statement. There has been a vast amount of progress in the improvement of facilities for his education, recreation and broader cultural achievement and for the protection and improvement of his physical well being. In close pursuit of this progress, facilities for the preservation of his mental health have been

greatly improved and enlarged. We are more conscious than ever before that the mentally healthy child of today will be the good citizen of tomorrow and for this reason more attention is being paid to the nervous disorders of childhood which may be related to psychoneuroses of later life. We are less concerned perhaps with behavior problems associated with mental deficiency, which are more easily recognized and the solution of which has been much simplified by well formulated methods of procedure. It has been learned, furthermore, that many of the common behavior problems of boys and girls are associated with slight deviations of personality reaction, which often occur in children of good intellectual and emotional endowment and when properly understood are recognized as being quite normal or at least average reactions to difficult interpersonal relationships or other disturbing environmental influences. In some cases there are physical disorders which have been overlooked and which are contributory to reactions of impatience, irritability or even rebellious conduct. One cannot therefore stress too much the importance of a thorough physical examination, with adequate laboratory studies when indicated, of the child whose happiness and efficiency appear to be seriously disturbed.

## RECENT GROWTH OF INTEREST

Within the present decade, more particularly within the past five or six years, an increasing interest has been noted of the mental hygiene movement as related to the psychoneuroses through the influence of Dr. Franklin G. Ebaugh of Denver, professor of psychiatry, University of Colorado Medical School, and director of the Division of Psychiatric Education of the National Committee for Mental Hygiene. Dr. Ebaugh has within this time insisted that the departments of psychiatry of the medical schools of this country give more attention to the teaching of the psychoneuroses, and I am sure that he has been gratified by the favorable response to his suggestion. How much importance he attaches to an adequate understanding of these disorders is indicated by a chapter in his book,<sup>8</sup> from which I quote:

The neuroses constitute the most frequent pathological situations encountered by the neuropsychiatrist. Their frequency is not reflected in statistics, since neurotic patients, although they make up the bulk of the clientele of neurologists and psychiatrists in private and in outpatient practice, nevertheless rarely seek treatment in public mental hospitals. The student should view the problem in the light of its tremendous social significance. If it could be reckoned, it would probably be found that the sum total of economic and social liabilities produced by the neuroses would be greater than the amount of damage inflicted on society by the psychoses.

While one cannot escape the conclusion, looking at the subject from a broad and unprejudiced point of view, that the psychoneuroses constitute a tremendous medical, social and economic problem, it should not escape attention that a large percentage of the most brilliant accomplishments in the fields of art, science and literature have been achieved by those who have had manifest neurotic tendencies, if not actual psychoneuroses. The same might be said of many of the outstanding leaders of commerce and industry, as well as of a host of others in the skilled professions. In other words, without citing prominent examples with which many are familiar, it would appear that the psychoneurotic individual has made a substantial contribution

5. Elliotson, John: *The Zeist*, London, 1842-1855.

6. Breuer, Josef, and Freud, Sigmund: *Studien über Hysterie*, Leipzig, F. Deuticke, 1895.

7. Janet, Pierre: *Etat mental des hystériques*, New York, G. P. Putnam's Sons, 1901.

8. Strecker, E. A., and Ebaugh, F. G.: *Practical Clinical Psychiatry for Students and Practitioners*, Philadelphia, P. Blakiston's Son & Co., 1935.

to the social and economic progress of civilization; this by means of a strong impulse and peculiar vision which may be greater than that of others possessing equal intellectual and emotional endowment. He has given color to life in the variety of his achievement which has made him almost if not quite indispensable to the happiness of others.

It is obviously not within the scope of this paper to undertake even an adequate outline of the most acceptable and efficacious methods of handling the various forms of human behavior which might fall within the classification of the psychoneuroses. Some of the fundamental principles of such an approach have only been implied. No effort was made to discuss the undoubted influence of social and economic factors which now play such an important role in the production of anxiety states. These, however, affect such large groups of people in any given community that much of their anxiety may be regarded as falling within normal limitations of reaction to difficult situations which are not peculiar to any particular individual. There is little, if any, repression of such anxiety and, therefore, less typical psychoneurotic behavior than might be anticipated. I did, however, call attention to some of the conditioning influences of childhood and referred to compensatory neurotic reactions which are sometimes of value to the adult and which may be regarded as benign and inevitable formations of escape from the inner tension of threatening or unbearable states of emotional conflict.

Throughout this discussion I have endeavored to emphasize the tremendous constructive influence of the mental hygiene movement, and especially that of the National Committee in its various fields of activity. However, our principal interest has been stimulated by the increasing recognition, by psychiatrists and other mental hygienists, of the need of a better and more widespread understanding, by physicians generally, of the nature and what appear to be some of the sources of origin of the psychoneuroses. Since they are looked on as benign types of deviation in personality reaction, which are believed to have their origin in early childhood and to be dependent on various fixations at that period of life, they offer much encouragement to those who have sufficient knowledge, experience and patience to undertake a study of the total personality makeup and to investigate the motivations of its various types of behavior. The most frequent motivation in the average case presenting symptoms of psychoneurotic reaction to repressed anxiety is an evident tendency to regress to childlike or infantile types of behavior, representing various forms of escape from reality, and some of these by conversion may simulate serious somatic disease. Hence the need again of a thorough physical examination in any case presenting even the most clearly defined clinical symptoms of a psychoneurosis. This is not only of value in itself but will also increase the confidence of the patient and help to preserve his self esteem.

The regressive tendency in all the psychoneuroses is of such importance that it has justified the synonymous designation of "regression neuroses" for these disorders. It represents a reaction of dependence and lack of self reliance in times of stress and is evidence of more easy adaptability on a level of emotional immaturity. In other words it is an indication, at least in some degree, of inadequate character formation. This at once suggests the importance of character building

agencies during the formative period of childhood, including the home, the school, the church, the playground and other recreational facilities, along with the development of special skills and cultural outlets. All are valuable aids in the enhancement of a feeling of self reliance, an indispensable need of later life and one that will enable the individual to make emotional adjustments on a more mature level of adaptability. After a sufficient degree of insight has been given by whatever method may be employed, this is the goal which is sought in the treatment of adult psychoneuroses with regressive tendencies, many of which occur in persons who show unmistakable evidences of inadequate character formation in early childhood.

In efforts such as these, and others of equal importance, the mental hygiene movement has taken a prominent part, especially in recent years. It has supported the leadership of those who have demonstrated that much can be done in a program looking toward a better understanding of the mental health of people who give evidence of benign deviations of personality reaction and who constitute a considerable proportion of our most valuable population.

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## Special Article

### THE PHYSIOLOGY OF VITAMIN C

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*This article and others recently published or to be published comprise a new series on the present status of our knowledge of the vitamins. They have been prepared under the general auspices of the Council on Pharmacy and Chemistry and the Council on Foods. The opinions expressed are those of the authors and not necessarily the opinions of either council. Reprints are not available but the articles will be published later in book form.—Ed.*

#### ORIGIN AND PHYSIOLOGIC CONTROL

Dry seeds contain practically no ascorbic or dehydroascorbic acid but, when they are moistened and warmed, ascorbic acid appears within a few hours in the areas where the sprouting processes are apparently initiated.<sup>1</sup> Unripe, rapidly growing seeds, such as green peas, are relatively rich sources of the vitamin, but as ripening advances the concentration approaches zero. An extensive literature<sup>2</sup> indicates that all actively growing parts of the higher plants (roots, stems, buds and pods), all fresh green leaves, many of the algae<sup>3</sup> and perhaps even bacteria<sup>4</sup> contain significant quantities of the vitamin. The carotenoid pigments are frequently accompanied by high concentrations of ascorbic acid in both plant and animal tissues, as in rose hips, paprikas and corpora lutea, but there are many exceptions to such a relationship, as in vitamin rich, nonpigmented sprouts.

Of the extensive number of animals studied, only man, the other primates and guinea pigs do not have a

From the University of Pittsburgh.  
1. Glick, David: Quantitative Distribution of Ascorbic Acid in the Growing Barley Embryo, *Ztschr. f. physiol. Chem.* **245**: 211 (Feb.) 1937.  
2. von Hausen, Synnöve: Die Rolle des Vitamins C beim Wachstum der höheren Pflanzen, *Biochem. Ztschr.* **288**: 378 (Dec.) 1936.  
3. King, C. G.: Vitamin C: Ascorbic Acid, *Physiol. Rev.* **16**: 233 (April) 1936.  
4. Norris, E. R.; Simeon, M. K., and Williams, H. B.: The Vitamin B and C Content of Marine Algae, *J. Nutrition* **13**: 425 (April) 1937.  
5. Bourne, G., and Allen, R.: Vitamin C in Lower Organisms, *Australian J. Exper. Biol. & M. Sc.* **13**: 165 (Feb.) 1935.

capacity to synthesize ascorbic acid. There is no convincing evidence that infants, placental tissue or any of the tissues of the animals named can synthesize ascorbic acid at any stage in their development. The evidence that is frequently cited in the literature to prove such a synthesis can be interpreted as well, and in most cases better, on the basis of selective conservation of the vitamin in the more vital tissues, such as the pituitary body, during a period of general body depletion. Furthermore, it is known that both human beings and guinea pigs are subject to scurvy during gestation and lactation. The early synthesis of vitamin C in chick embryos<sup>5</sup> demonstrates a tissue reaction that is retained by the adult organism.

The claim that mannose could serve as a precursor of vitamin C in rat tissue could not be confirmed.<sup>6</sup> There is still no clear evidence concerning the nature of the substance from which vitamin C is synthesized in animals or plants, nor is there any indication of the specific agencies or tissues responsible for the synthesis. The known metabolites in plants and animals that are most closely related to the vitamin are glucuronic and galacturonic acids. Either of these could give rise to the vitamin by replacement of the carbonyl group from the first to the fourth or fifth carbon, followed by lactonization and enolization.

The distribution of vitamin C in the human body<sup>7</sup> is comparable with that in the guinea pig and in animals that synthesize a continuous supply in their own tissues, such as the rat and the chicken.<sup>8</sup> Giroud<sup>9</sup> has studied an extensive number of invertebrates. In general, the tissues that are characterized by a high metabolic activity have a high vitamin C content. Thus the individual tissues of young animals are consistently richer in vitamin C than those of older animals, and in special cases in which one can follow the changing vitamin content during cycles of activity and atrophy the relationship to functional activity is striking. An excellent illustration of this principle is provided by the microtitration studies of Glick and Biskind on thymus<sup>10</sup> and corpus luteum.<sup>11</sup>

Normal tissues from different animals do not fall in exactly the same sequence with regard to concentration, but the following order corresponds approximately to a general decreasing concentration of vitamin C: pituitary body (2.6 mg. per gram in the pars intermedia), corpus luteum, adrenal cortex, young thymus, liver, brain, testes, ovaries, spleen, thyroid, pancreas, salivary glands, lung, kidney, intestinal wall, heart, muscle, spinal fluid and blood. Normally the average content of human blood plasma is about 1.2 mg. of vitamin per hundred cubic centimeters,<sup>12</sup> but depletion reduces this to about

0.8 mg. as the "prescurvitic state" is reached and to approximately 0.5 mg. with the appearance of "clinical scurvy." Tumor tissue varies greatly with different types but generally shows a high content during rapid growth and a characteristic decrease with necrosis.<sup>13</sup>

In relation to infant nutrition and from the point of view of comparative physiology, it is both interesting and important to note that human milk normally contains from four to five times more vitamin C than cow's milk. The human infant has a high dietary requirement to meet the need for rapid growth and general metabolism, but the calf is not dependent on a dietary supply, its current requirement being met by tissue synthesis, as in the rat and the chick. When the human mother's diet is seriously deficient in antiscorbutic foods, however, the concentration in the milk gradually falls to approximately that of cow's milk,<sup>14</sup> and when the vitamin C intake is increased, the antiscorbutic value of the milk returns to normal.

#### METABOLISM

Harris and Ray<sup>15</sup> and later many other writers have shown that there is a continuous but decreasing urinary excretion of vitamin C when there is no dietary intake. When the body has become depleted of its normal vitamin C content, readministration of the vitamin first causes a restorage in the various tissues, and when the deficiency has been made up, urinary excretion of the excess again follows. Such balance experiments provide a reasonably satisfactory means of clinically evaluating the various stages of malnutrition. The net loss, or difference between intake and excretion, for a person in a state of "saturation" may be taken as an approximation of the quantity normally destroyed, or "burned," in the body daily. This value apparently varies considerably with different persons but may be estimated to fall in the range of from 25 to 50 mg. daily. It appears from the work of Hawley and her associates<sup>16</sup> that the quantity of vitamin excreted may be varied by merely changing the acid-base balance of the food intake.

#### GENERAL PHYSIOLOGIC RELATIONSHIPS

The most clearly established functional role of vitamin C in animal tissues is its relationship to the physical state of the "intercellular material," as described by Wolbach and his associates. A detailed discussion of this field of study will be found in the section on pathology. The relationship of vitamin C to calcium metabolism is intimately associated with this phenomenon and is discussed in the same section. Both roles are clearly of major importance in relation to growth and repair of bones and teeth, and it is evident that other tissues, such as cartilage and white fibrous tissue, are markedly affected in a similar manner. The chemical mechanism through which the vitamin brings about this control of metabolism is still unknown.

5. Ray, S. N.: A Note on the Presence of Vitamin C in the Chick Embryo, *Biochem. J.* **28**: 189, 1934.

6. Mawthorne, J. R., and Harrison, D. C.: Mannose as a Possible Precursor of Ascorbic Acid in the Tissues of the Rat, *Biochem. J.* **31**: 1061 (July) 1937. Scheunert, A., and Schieblisch, M.: Vitamin C Production in the Rat by Various Nutrients, *Ztschr. f. physiol. Chem.* **246**: 272 (April) 1937.

7. Yavorsky, Martin; Almaden, Philip, and King, C. G.: The Vitamin C Content of Human Tissues, *J. Biol. Chem.* **106**: 525 (Sept.) 1934.

8. Bessey, O. A., and King, C. G.: The Distribution of Vitamin C in Plant and Animal Tissues, and Its Determination, *J. Biol. Chem.* **103**: 687 (Feb.) 1933. Daniel, Esther P., and Munsell, Hazel E.: Vitamin Content of Foods, *Miscellaneous Circular* 275, U. S. Department of Agriculture, June 1937.

9. Giroud, Antoine, and Rakoto-Ratsimamanga, A.: Distribution of Vitamin C in Invertebrates, *Bull. Soc. chim. Biol.* **18**: 375 (Dec.) 1936.

10. Glick, David, and Biskind, G. R.: The Concentration of Vitamin C in the Thymus in Relation to Its Histologic Changes at Different Stages of Development and Regression, *J. Biol. Chem.* **114**: 1 (May) 1936.

11. Biskind, G. R., and Glick, David: The Vitamin C Concentration of the Corpus Luteum with Reference to the Stage of the Estrus Cycle and Pregnancy, *J. Biol. Chem.* **113**: 27 (Feb.) 1936.

12. Abt, A. B.; Farmer, C. J., and Epstein, I. M.: Normal Cervitamic (Ascorbic) Acid Determinations in Blood Plasma and Their Relationship to Capillary Resistance, *J. Pediat.* **8**: 1 (Jan.) 1936. Stephens, D. J., and Hawley, Estelle E.: The Partition of Ascorbic Acid in Blood, *J. Biol. Chem.* **115**: 653 (Oct.) 1936.

13. Musulin, R. R.; Silverblatt, Ethel; King, C. G., and Woodward, Gladys, E.: The Titration and Biological Assay of Vitamin C in Tumor Tissue, *Am. J. Cancer* **27**: 707 (Aug.) 1936. Voegtlin, Carl; Kahler, Herbert, and Johnson, J. M.: The Colorimetric and Spectrophotometric Determination of Vitamin C in Malignant Tumors, *Am. J. Cancer* **20**: 477 (March) 1937. Kellie, A. E., and Zilva, S. S.: The Indophenol-Reducing Substance in Jensen Rat Sarcoma, *Biochem. J.* **30**: 1216 (July) 1936.

14. Selleg, Iva, and King, C. G.: The Vitamin C Content of Human Milk and Its Variation with Diet, *J. Nutrition* **11**: 599 (June) 1936. Neuweiler, W.: Vitamin C Content of Milk, *Ztschr. f. Vitaminforsch.* **4**: 39 (Jan.) 1935; the Vitamin C Requirement During Pregnancy and Lactation, *Klin. Wchnschr.* **14**: 1793 (Dec. 14) 1935.

15. Harris, L. J., and Ray, S. N.: Diagnosis of Vitamin C Subnutrition by Urine Analysis, with a Note on the Antiscorbutic Value of Human Milk, *Lancet* **i**: 71 (Jan. 12) 1935. von Euler, Hans, and Malmberg, Maj: Excretion and Accumulation of Vitamin C in the Human and Animal Organism, *Biochem. Ztschr.* **270**: 338, 1935.

16. Hawley, Estelle E.; Frazer, J. P.; Button, L. L., and Stevens, D. J.: The Effect of the Administration of Sodium Bicarbonate and of Ammonium Chloride on the Amount of Ascorbic Acid Found in the Urine, *J. Nutrition* **12**: 215 (Aug.) 1936.

From the close relationship between growth and vitamin C content it is reasonable to conclude that the vitamin has an essential role in the over-all growth processes of animals and plants. Work by Bonner and Axtman indicates that ascorbic acid serves as a powerful growth stimulant for young plant embryos that have been isolated from their seed reserve food supply.

Using the acid and silver nitrate staining technic, Bourne and Allen<sup>4</sup> and Giroud and Leblond<sup>17</sup> made detailed studies of the distribution of ascorbic acid within the cell, as well as the relative distribution in whole tissues. In an extensive series of papers from the two laboratories they have emphasized the association of the vitamin with the Golgi apparatus and mitochondria. Their results have served to emphasize the selective retention of the vitamin in certain parts of the cell and in vital tissues such as the pituitary body.

The anemia that accompanies depletion of vitamin C is thought to be due primarily to dysfunction of the tissues that form the red blood cells rather than to excessive destruction of cells or specific failure in synthesis of hemoglobin. The decrease in hemoglobin is roughly parallel to the decrease in red blood cells and is accompanied by a moderate decrease in clotting time and in the number of blood platelets.

When guinea pigs are given diets free from vitamin C or low intakes, impairment of physiologic functions can be demonstrated before growth is severely restricted or external evidences of scurvy appear. This "prescurbutic state" is clearly of common occurrence in the general population and in relation to human physiology and public health apparently represents an important field of investigation. Animals in such a border stage of deficiency are more sensitive to injury from injections of diphtheria toxin,<sup>18</sup> and their normal metabolic activity, as measured by dextrose tolerance, is moderately lowered.<sup>19</sup> Many, if not all, of the reports indicating detoxification by ascorbic acid in vitro apparently were due to underestimating the importance of  $pH$  effects.<sup>19</sup> The arteries, teeth and adrenals are particularly sensitive to injury by toxins when the tissues are depleted of their normal vitamin C reserves. Resistance against infections is also lowered in the prescurbutic condition,<sup>20</sup> and it is worthy of note that bacterial toxins can cause losses of from 50 to 85 per cent of the vitamin normally contained in the adrenals.<sup>21</sup>

The claim by Szent-Györgyi that a new factor called "vitamin P" is responsible for the antihemorrhagic effect attributed to vitamin C has been shown to be erroneous. The postulated "vitamin P" apparently does not exist.<sup>22</sup>

#### SPECIFIC RELATIONSHIPS TO ENZYMES

At the present time it is impossible to indicate with certainty any specific relationships between vitamin C and the enzymes in animal tissues so far as normal physiologic processes are concerned; but many papers

record activating and inhibiting effects on enzymes in vitro and it is not unlikely that some of the observed effects<sup>2</sup> will prove to be physiologically significant.

Both ascorbic acid and dehydroascorbic acid, and a number of their cation complexes (e. g., with  $Fe^{++}$ ,  $Cu^{++}$  and  $Mn^{++}$ ), have been reported to exert marked effects on specific enzymes, and studies on cathepsin, papain,<sup>23</sup> amylase,<sup>24</sup> arginase, catalase, urease,<sup>25</sup> tyrosinase and nuclease<sup>26</sup> have offered special promise. It is likely that many (but probably not all) of the observed effects are more or less fortuitous observations in vitro, with little bearing on the role of the vitamin in vivo. The results from different laboratories have not been in good agreement, and it is evident in some cases that the nonspecific acidity and reducing effects of the vitamin have caused changes that were attributed specifically to the vitamin.

The catalyst frequently called "ascorbic acid oxidase," which occurs widely in plant tissues, has been shown to have the composition and properties of a protein combined with copper, in which the copper serves as the active catalyst.<sup>27</sup> Since there is evidence that the catalyst, or enzyme, is not specific for vitamin C as a substrate,<sup>27a</sup> the name should be discontinued.

The cytochrome-indophenol oxidase system has been shown to act as a catalyst for the aerobic oxidation of ascorbic acid, and there is evidence that this system is chiefly responsible for the observed (slow) aerobic oxidation of the vitamin in excised animal tissues.<sup>28</sup> In view of Barron's<sup>29</sup> work, the hemochromogens are also of interest.

Although the theory is widely held that vitamin C serves primarily as a hydrogen-transport agent, or respiratory catalyst, there is no clear-cut evidence to support the theory in relation to animal tissues.<sup>30</sup> The experiments of Hopkins and Morgan<sup>31</sup> and of Borscock and his co-workers<sup>32</sup> strongly support the theory in relation to plants, however, and place special emphasis on the role of glutathione in such a cycle in animal tissues.<sup>28</sup> A strong point against the theory that vitamin C functions as a major respiratory catalyst is the fact that depleted tissues do not show a decreased respiration capacity, and when ascorbate is added to the depleted tissues there is no rise in the true oxygen consumption. The livers of scorbutic animals show an increased oxygen consumption which is comparable to that shown by the entire body.<sup>30</sup>

Recently Green and Richter<sup>33</sup> reported that ascorbic acid acts as an inhibitor in the adrenalin-adrenochrome

23. Maschmann, Ernst: Observations on the Activation of Plant Proteases, *Ztschr. f. physiol. Chem.* **228**:141, 1934.

24. Purr, Arnulf: The Influence of Vitamin C on Plant and Animal Amylases, *Biochem. J.* **28**:1141 (June) 1934.

25. Leuthardt, F., and Koller, F.: Concerning the Activation of Arginase, *Helvet. chim. Acta* **17**:1030, 1934. Badinond, C. A.: Effects of Various Metals in the Form of Ionizable Salts or in Complexes on the Activation of Liver Arginase by Vitamin C, *Compt. rend. Soc. de biol.* **125**:283, 1937.

26. Maver, Mary E., and Voegtlin, Carl: The Chemistry of Cell Division, *Am. J. Cancer* **25**:780 (Dec.) 1935.

27. Stotz, Elmer; Harrer, C. J., and King, C. G.: A Study of Ascorbic Acid Oxidase in Relation to Copper, *J. Biol. Chem.* **119**:511 (July) 1937.

27a. Johnson, S. W., and Zilva, S. S.: The Relation Between the Rate of Enzymic Oxidation and the Stereochemical Structure of Ascorbic Acid and Its Analogues, *Biochem. J.* **31**:1366 (No. 6) 1937.

28. Stotz, Elmer; Schultze, M. O.; Harrer, C. J., and King, C. G.: The Oxidation of Ascorbic Acid in the Presence of Guinea Pig Liver, *J. Biol. Chem.* **122**:407 (Jan.) 1938.

29. Barron, E. S. G.; De Meio, R. H., and Klemperer, F.: Biological Oxidations: V. Copper and Hemochromogens as Catalysts for the Oxidation of Ascorbic Acid, *J. Biol. Chem.* **112**:625 (Jan.) 1936.

30. Stotz, Elmer; Harrer, C. J., Schultze, M. O., and King, C. G.: Tissue Respiration Studies on Guinea Pig Liver and Kidney, *J. Biol. Chem.* **111**:111 (Jan.) 1937.

31. Hopkins, E. G., and Zilva, S. S.: The Relation Between the Rate of Enzymic Oxidation and the Stereochemical Structure of Ascorbic Acid and Its Analogues, *Biochem. J.* **31**:1366 (No. 6) 1937.

32. Borscock, Henry; Devenport, H. W.; and Warner, R. C.: The Oxidation of Ascorbic Acid and Its Reduction in Vitro and in Vivo, *J. Biol. Chem.* **117**:237 (Jan.) 1937.

33. Green, D. E., and Richter, David: Adrenaline and Adrenochrome, *Biochem. J.* **31**:596 (April) 1937.

17. Giroud, Antoine, and Leblond, C. P.: Histologic Study of Renal Elimination of Ascorbic Acid, *Anat. Rec.* **68**:113 (April 25) 1937.

18. King, C. G., and Menten, M. L.: The Influence of Vitamin C Level upon Resistance to Diphtheria Toxin, *J. Nutrition* **10**:129, 141 (Aug.) 1935. Greenwald, C. K., and Harde, E.: Vitamin C and Diphtheria Toxin, *Proc. Soc. Exper. Biol. & Med.* **32**:1157 (April) 1935. Sigal and King.<sup>19</sup>

19. Sigal, Alex., and King, C. G.: The Influence of Vitamin C Deficiency upon the Resistance of Guinea Pigs to Diphtheria Toxin, *J. Pharmacol. & Exper. Therap.* **61**:1 (Sept.) 1937; Vitamin C and Diphtheria Toxin, *ibid.* **59**:468 (April) 1937.

20. Perla, David, and Marmorston, Jessie: Role of Vitamin C in Resistance, *Arch. Path.* **23**:683 (May) 1937.

21. Lyman, C. M., and King, C. G.: The Effect of Diphtheria Toxin on the Vitamin C Content of Guinea Pig Tissues, *J. Pharmacol. & Exper. Therap.* **56**:209 (Feb.) 1936. Harris, L. J.; Passmore, R., and Pagel, W.: Vitamin C and Infection, *Lancet* **2**:183 (July 24) 1937. Torrance, W. C.: A Comparison of the Effect of Different Toxic Bacterial Products upon the Adrenals of Guinea Pigs, *J. Bact.* **33**:645 (June) 1937.

22. Zilva, S. S.: Vitamin P, *Biochem. J.* **31**:915 (June) 1937.



oxidation system in heart tissue. Lemberg, Cortis-Jones and Norric<sup>34</sup> have studied a coupled type of oxidation of ascorbic acid and hemochromogens, extending the earlier work of Barron<sup>20</sup> and Karrer, especially correlating the coupled oxidation with verdo-hemochromogen formation from hematin.

Great interest is attached to the finding by Ecker and associates of a close relationship between vitamin C and guinea pig blood complement.<sup>35</sup> The reversible oxidation-reduction behavior of complement, as a single protein substance, was found to be dependent in large part on the ascorbic acid content of the plasma. The normal activity of complement was contingent on its being present in the reduced state. Although other reducing agents such as glutathione, cysteine and hydrogen sulfide could bring about the reduction and activation, ascorbic acid was found to be the reducing agent of major importance in vivo.

Reedman and McHenry<sup>36</sup> have reported an extensive study of the degree of conjugation of ascorbic acid with protein in plants, but there has been no evidence that compounds of comparable stability occur in animal tissues.

## Council on Foods

### ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION AND WILL BE LISTED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED.

FRANKLIN C. BING, Secretary.

### CELLU BRAND APPLE RINGS

*Distributor.*—Chicago Dietetic Supply House, Inc., Chicago.

*Description.*—Slices of apples, peeled and without cores, packed in undiluted juice without added sugar.

*Manufacture.*—Roman Beauty apples are sorted, washed, peeled, cored, cut into rings or slices and blanched. The slices or rings are placed in cans, covered with undiluted apple juice, vacuum sealed and heat processed. The spray residue on the apple used is kept within the federal tolerance.

*Analysis* (submitted by manufacturer).—Moisture 87.4%, total solids 12.6%, ash 0.2%, fat (ether extract) 0.3%, protein ( $N \times 6.25$ ) 0.1%, reducing sugar as invert 6.7%, sucrose (by copper reduction) 2.7%, crude fiber 1.0%, carbohydrates other than crude fiber (by difference) 11.0%.

*Calories.*—0.47 per gram; 13 per ounce.

- (1) BURTON'S PURE LEMON EXTRACT
- (2) BURTON'S PURE ALMOND EXTRACT

*Manufacturer.*—W. Burton & Company, Inc., a wholly owned subsidiary of Fred Fear & Co., Brooklyn.

*Description.*—(1) Lemon extract containing ethyl alcohol, lemon oil and water.

(2) Almond extract containing water, ethyl alcohol and pure oil of almond.

*Manufacture.*—(1) The lemon oil is dissolved in ethyl alcohol, water is added and the mixture is filtered and bottled.

(2) The oil of almond is dissolved in ethyl alcohol, water is added and the mixture is filtered and bottled.

*Analyses* (submitted by manufacturer).—(1) Alcohol, by volume, 90%; water, by volume, 5%; oil of lemon, by volume, 5%. (2) Alcohol, by volume, 20%; water, by volume, 78.09%; oil of almond, by volume, 1.01%.

34. Lemberg, R.; Cortis-Jones, B., and Norric, M.: Coupled Oxidation of Ascorbic Acid and Hemochromogens, *Biochem. J.* 32:149 (Jan.) 1938.

35. Ecker, E. E.; Pillemer, L.; Wertheimer, D., and Grads, H.: J. Immunol. 34:19 (Jan.) 1938.

36. Reedman, E. J., and McHenry, E. W.: Combined Ascorbic Acid in Plants, *Biochem. J.* 32:85 (Jan.) 1938.

### NUTRADIET BRAND APPLE SAUCE

*Distributor.*—The Nutradiet Company, a subsidiary of S & W Fine Foods, Inc., San Francisco.

*Description.*—Cooked strained apple sauce, packed without addition of sugar.

*Manufacture.*—Properly matured apples are graded, inspected, passed through water sprays to remove spray residues, and peeled. The peeled apples are washed, inspected, cut, steamed for seven minutes, strained and automatically packed into cans, which are sealed and processed.

*Analysis* (submitted by manufacturer).—Moisture 87.1%, total solids 12.9%, ash 0.2%, fat (ether extract) 0.04%, protein ( $N \times 6.25$ ) 0.2%, crude fiber 0.5%, carbohydrates other than crude fiber (by difference) 11.46%, titratable acidity as malic acid 0.5%.

*Calories.*—0.47 per gram; 13 per ounce.

*Claims of Manufacturer.*—For diets in which sweetened fruit is proscribed.

### MRS. PALEY'S BABY FOOD—STRAINED VEGETABLE SOUP WITH BEEF BROTH AND CEREAL

*Manufacturer.*—Paley-Sachs Food Company, Houston, Texas.

*Description.*—Strained vegetable soup containing beef stock, carrots, potatoes, tomato purée, soya beans, onions, cabbage, celery, barley and brown rice, slightly seasoned with salt.

*Manufacture.*—U. S. government inspected beef is wiped with a damp cloth and cut into small pieces. Meat and water are allowed to stand in a cool place for four hours, heated slowly and cooked. The juice is pressed out of the meat and cooled, the fat removed, and the stock cooked with the vegetables which have been cleaned and cut into pieces. The barley, brown rice and soya beans are soaked, precooked, and added to the stock and vegetables, and cooked in air-tight pressure cookers. The mixture is then strained, filled, sealed in vacuum sealing machine and heat processed.

*Analysis* (submitted by manufacturer).—Moisture 84.2%, total solids 15.8%, ash 1.1%, fat (ether extract) 0.2%, protein ( $N \times 6.25$ ) 2.6%, reducing sugars as dextrose 1.3%, sucrose 0.96%, crude fiber 1.02%, total carbohydrates other than crude fiber (by difference) 10.9%, calcium (Ca) 0.016%, phosphorus (P) 0.071%, iron (Fe) 0.001%.

*Calories.*—0.6 per gram; 17 per ounce.

### ASTORIA BRAND FREE-FROM- PRESERVATIVE CHERRIES

*Manufacturer.*—Fruit Products Corporation, Belleville, N. J.

*Description.*—Bottled, sweetened cherries free from preservatives; oil of bitter almonds, citric acid, U. S. Department of Agriculture certified color and a small amount of alcohol are added. The alcohol is used to dissolve the flavoring.

*Manufacture.*—Royal Anne Cherries, No. 1 grade, are immersed in a dilute solution of hydrochloric acid to remove spray residue, washed, placed in a solution of sulfurous acid (3,000 parts per million of  $SO_2$  in water) to bleach the cherries, destroy any organic living matter and preserve the fruit until it is heated. The cherries are washed several times, pitted and stemmed by hand, blanched, again washed in cold water and colored in cold water with U. S. Department of Agriculture certified color. The fruit is heated in sugar syrup containing a small amount of citric acid and allowed to stand in the syrup until the fruit and juice cool to room temperature. The fruit is drained and packed in bottles. Fresh syrup containing citric acid, oil of bitter almond flavoring and a small amount of alcohol is added and the bottles are automatically sealed and heat processed.

*Analysis* (submitted by manufacturer).—Moisture 70.0%, total solids 30.0%, ash 0.2%, fat (ether extract) 0.2%, protein ( $N \times 6.25$ ) 0.2%, reducing sugars as invert sugar 5.6%, sucrose 22.8%, crude fiber 0.3%, carbohydrates other than crude fiber (by difference) 29.1%, sulfur dioxide none, sodium benzoate none, certified food color present, flavor present.

*Calories.*—1.2 per gram; 34 per ounce.

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, SEPTEMBER 17, 1938

## THE PROBLEM OF THE REFUGEE PHYSICIAN

The anti-Jewish campaign of the German government, reflected in the Berlin letter in this issue of THE JOURNAL, and the more recent actions taken in Austria and in Italy have brought prominently before the American medical profession the problem of the physician who is a refugee. Important is a knowledge of the scope of the problem, for which exact data are required. Table 1, secured through the assistance of the Immigration and Naturalization office of the United States Department of Labor, gives the number of immigrant alien physicians from Austria, Germany and Italy during each of the years from 1928 through 1938.

TABLE 1.—Immigrant Aliens from Austria, Germany and Italy (Last Permanent Residence) Admitted to the United States as Immigrant Aliens for Permanent Residence, Whose Profession or Calling was Physician, Years Ended June 30, 1928 to 1938

During	Immigrant Physicians from:		
	Austria	Germany	Italy
1928.....	3	22	11
1929.....	5	22	11
1930.....	8	13	11
1931.....	8	8	16
1932.....	14	9	15
1933.....	4	4	8
1934.....	6	160	12
1935.....	13	91	6
1936.....	11	242	9
1937.....	15	271	14
1938*.....	62	302	26
Totals .....	149	1,144	139

\* Figures for the last fiscal year subject to possible slight change when final statistics for that year become complete.

With the aid of the state medical licensing boards and the Council on Medical Education and Hospitals, table 2 was prepared of the graduates of foreign schools licensed in the United States in the years 1928-1937 inclusive.

While the total number of physicians coming to this country from abroad may not be great, the problem is

increasing. No doubt the difficulty may well continue until all living Jewish physicians from Germany, Austria and Italy have been transplanted. Perhaps six to seven thousand physicians will be absorbed by the rest of the world, approximately 3,000 being already absorbed.

Interesting observations develop from a comparison of the two tables here included. Apparently many American citizens are studying abroad, securing diplomas from foreign medical schools and returning to the United States. Thus 271 immigrant physicians came from Germany in 1937, but 335 were licensed, making some sixty Americans who returned. Fifteen immigrant aliens came from Austria in 1937, but the total number licensed was eighty-four, making sixty-nine who were probably American citizens. One hundred and thirteen immigrants from Italy were licensed in 1937, but only fourteen were aliens. The American

TABLE 2.—Graduates of Foreign Schools Licensed in the Years 1928-1937 Inclusive

Year	Germany	Austria	Italy	Czecho- slovakia	Hungary
1928.....	16	9	13	6	6
1929.....	31	17	30	5	12
1930.....	20	18	16	3	14
1931.....	19	13	26	4	12
1932.....	14	18	29	3	13
1933.....	18	17	35	5	12
1934.....	157	22	34	7	7
1935.....	155	28	48	1	13
1936.....	291	48	80	5	4
1937.....	335	84	113	4	23
Totals.....	1,050	274	430	41	115

Medical Association has called attention repeatedly for the last ten years to the problem of American physicians studying abroad in schools of lesser rank than those available in this country and then returning to the United States to secure licensure.

This problem is one which is already concerning the various state medical licensing boards, since the licensure of doctors to practice is still within the power of the individual states. The question of restriction of immigration is one which will no doubt come before the Congress of the United States. The situation is fraught with difficulties arising from economic stress, chauvinistic prejudices, fears that have been stimulated by propaganda, and other motivations. The American Medical Association through its House of Delegates at the San Francisco session adopted a resolution expressing the desirability that foreigners, graduates of foreign institutions, be required to obtain full citizenship in the United States before being admitted to practice. It is significant, as reported by the correspondent from Warsaw in this issue (page 1120), that hasty action has resulted in a disruption of the national medical association of Poland, leaving the physicians as a profession at the mercy of the politicians. Only by careful sympathetic consideration will a reasonable solution be possible.

## CHANGING POPULATION: THE PREMISE

The probable future population of this and other countries is, as has been pointed out editorially in *THE JOURNAL*,<sup>1</sup> important for long-range planning in health matters as well as in other economic subjects. Recognition has been accorded this fact by the federal government in a lengthy report to the National Resources Committee on the problems of a changing population.<sup>2</sup> According to the estimates of Warren S. Thompson and P. K. Whelpton, based on medium fertility and mortality rates, the population in the United States will continue to grow for fifty years but at a constantly decreasing rate, reaching 152,000,000 in 1980. Even with the highest rate that might reasonably be assumed, there would be a natural increase of less than 50,000,000 from 1935 to 1980. The minimum estimate on the other extreme would give a peak population of 138,000,000 in 1955 with a decrease of 10,000,000 during the succeeding quarter century.

These alternate estimates are based on extension of trends of birth rates and death rates now in evidence with allowance for certain qualifying factors. They all assume, however, that the span of life cannot be greatly extended—at least in comparison with the results of the past—and that there will be no sudden or complete reversal in the birth rate or any extraordinary effect on the size of the population from immigration or emigration.

These assumptions are an integral part of the forecast and the conclusions which the latter imply. The earliest life table for any area or population of the United States was that of Wigglesworth for Massachusetts and New Hampshire for the year 1789. According to his computation the expectation of life at birth at that time was 34.5 years for males and 36.5 years for females. While these results cannot perhaps be accepted at face value, the life expectancy for the total population of Massachusetts was 43.5 years in 1890. This may be compared with the expectation for the white population of the United States in 1929-1930 of 59.3 years for males and 62.6 for females. The improvement, while striking, may be compared, the report states, with the still longer expectation obtaining in New Zealand in 1931 of 65 years for males and 68 years for females, or in South Dakota in 1930 of 64.4 years for males and 66.8 years for females. These varying figures on life span indicate that the immediate prospects of attaining a great increase in life expectancy beyond present figures are not good.

The assumption that the birth rates will continue their present trend is difficult either to affirm or to deny. It is probable, but of course accurate evidence is lacking, that there has never been a time in man's past when the number of children born in proportion

to the number of women in the childbearing ages has been less. The biologic significance of this phenomenon is obscure. Likewise it cannot be said with certainty as yet that this apparent trend toward reversal of fertility is permanent. It is of too recent origin biologically, if not statistically, to constitute a thoroughly acceptable concept. If it is not to be continued, then the whole fabric of prophecy will collapse. It is most unfortunate in this connection that Clyde V. Kiser's discussion of the role of contraception on differential birth rates should have been deleted from the report.<sup>3</sup> If this factor is as important as is generally believed, its present and future influence on birth rates must be profound.

The report allows for a moderate amount of immigration after 1940 in some of the alternate estimates. This factor is at present an imponderable: the degree to which immigration may or may not occur is intimately bound up with mass psychology and the economic and labor pictures. Neither society as a whole nor governments individually have yet succeeded in consciously influencing any of these factors with conspicuous success. The effect of possible emigration on the population apparently has been ignored in the report. While there is certainly no reason to expect it in any ponderable quantity, it is a factor which might occur and should at least be mentioned.

Although this report on population may be considered one of the best that has ever appeared on the subject, its prophetic validity rests on certain assumptions the correctness of which only time can prove.

## THE TYRANNY OF ABBREVIATIONS

When abbreviations are used in medical papers, in the recording of case histories or physical examinations or in operative or pathologic reports, the meaning should be entirely clear to all who may have occasion to read them. This is not, of course, the case. Abbreviations of medical terms are used obviously to save the time of the writer; too often, however, the time thus saved is wasted many times over by the person who is trying to decipher the meaning originally intended. When placed within a context, many of the abbreviations commonly employed in medicine are reasonably clear to those intimately familiar with the particular field; but when removed from such environment they become even more abstruse. Few readers for example can probably identify with ease such fairly commonly employed abbreviations as M. T. R., PcB, P. P. D., M. E. D., s. e. d., M. K. R. or K. P. Even when the abbreviations are placed in the proper setting many medical men would have difficulty in translating PcB into "near point of convergence," M. T. R. into "Meinicke flocculation reaction" or M. E. D. into "minimal erythema dose."

1. Headed for the Last Census? editorial, J. A. M. A. 109:1638 (Nov. 13) 1937; Population—Supply and Demand, *ibid.* 109:1726 (Nov. 20) 1937.

2. The Problems of a Changing Population, Report of the Committee on Population Problems to the National Resources Committee, May 1938.

3. Notestein, Frank W.: Population Index 4:136 (July) 1933.

Although for the uninitiated the ophthalmologists possess probably the worst collection of uninterpretable abbreviations, such as K. P. for "keratitis punctata," Hm for "hyperopia manifest," O. U. for "oculus uterque (both eyes)," M. A. for "meter angle" and so on almost ad infinitum, those in other fields are by no means free of criticism. The average physician would usually interpret P. S. P. as the "phenolsulfonphthalein test," M. L. D. as "minimal lethal dose" and possibly P. P. D. as "purified protein derivative," but others who also may need to translate such initials, including manuscript editors, social service workers and statisticians, may have serious difficulties. Sometimes the attempt at interpretation gives rise to persistent errors of more or less serious nature, such as the reasonable interpretation of *E. coli* as "*Endamoeba coli*" when it should have been "*Escherichia coli*."

Hours sometimes have been spent in attempting to decode the meaning of such abbreviations. The use of such short cuts to expression may be an indication of unnecessary haste, careless recording of notes, or slipshod methods of experimentation and study. Reports are written for the reader, not the author, and the reader should not have to be an expert in cryptography to find out what it is all about.

## Current Comment

### THE UNCARED-FOR MILLIONS

The Statistical Bulletin of the Metropolitan Life Insurance Company, basing its figures on reports from millions of industrial policyholders, is regarded as a prompt and reliable indicator of trends in public health, morbidity and mortality. Census Bureau final figures are necessarily delayed. Even the provisional death rates published annually by the United States Public Health Service are not available until some months have elapsed. The current figures published in the life insurance company's bulletin, therefore, afford interesting indications. Over a period of years they are found to parallel closely the final figures published later. Just now it is popular in certain circles to refer to the millions of Americans who are unable to procure medical care because of inability to pay for it. The low income groups, it is said, fare worse than the frankly indigent, because the latter get for nothing what the former are unable to buy and are too proud to accept on any other basis. What then are actually the health and mortality trends in the low income groups—the people who buy weekly payment industrial insurance? According to the Statistical Bulletin:<sup>1</sup>

We live in an age of records. Some are justly proclaimed with banners flying and sirens screeching. Others, and not the least important, are achieved quietly, without the blare of trumpets, and would, indeed, pass altogether unnoticed were it not for statistics and statisticians. Their "dry" figures tell us that we are living in a period of remarkable achievements in public welfare. Our death rate, after a series of

continued lows, has, in the first six months of the current year, bettered last year's figure by no less than 10 per cent and has thereby established an all-time record that may justly be described as phenomenal.

In a succeeding paragraph we find:

With each succeeding month the mortality record for this year becomes more and more favorable. . . . Encouraging reports about the death rate in the general population of the United States come from various sections of the country. Alabama, Connecticut, Illinois, Indiana, Maine, Maryland, Michigan, Minnesota, New York, South Dakota and Virginia all report drops—and, in most instances, decided drops—in the number of deaths this year as compared with last.

Most significant of all is this statement, the italics being in the original:

. . . to date, it is apparent that *depression and widespread unemployment have done no visible harm to public health.*

### PSYCHIATRIC ASPECTS OF ARTIFICIAL FEVER THERAPY

In treating approximately 400 patients with the Kettering hypertherm, Ebaugh and his colleagues<sup>1</sup> noted that fever therapy appears to exaggerate a subject's main personality characteristics. The phlegmatic patient was generally little perturbed by the rise in temperature and was generally cooperative; the aggressive person commonly manifested signs of aggression and restlessness; the contented, sociable person became elated and even euphoric during hyperpyrexia. Exaggeration of personality patterns during the fever therapy was so consistent that, these authors believe, one might reasonably predict the individual patient's reaction to pyretotherapy if a previous evaluation of personality had been made. A common problem encountered in a department of fever therapy is the anxious, unstable person who is greatly concerned about his physical self and is apprehensive concerning fever therapy. He is peculiarly predisposed to delirious episodes and is often better rejected for hyperpyrexia, at least before suitable psychotherapeutic measures. The most important psychiatric problem of the fever therapist is the management of delirious episodes associated with hyperpyrexia. The number of such reactions, however, has been reduced in the later experience of these investigators. This is attributed to the application of psychotherapeutic measures, increased experience with fever therapy and careful control and avoidance of sedatives except when necessary. During the past year in the limited number of treatments in which sedatives were required, one dose of pentobarbital sodium 0.1 Gm. (1½ grains) or morphine sulfate 0.01 Gm. (one-sixth grain) was prescribed. Codeine sulfate 0.03 Gm. (one-half grain) was the drug of choice when sedation was necessary for children. Of the 350 patients who had delirious episodes during hyperpyrexia therapy, 200 were observed from February 1935 to February 1936, the incidence being one episode of delirium in four treatments. In the second series of 150 patients, observed from February 1936 to February 1937, the incidence dropped to one episode of delirium in eighteen treatments.

1. Ebaugh, F. G.; Barnacle, C. H., and Ewalt, J. R.: Psychiatric Aspects of Artificial Fever Therapy, *Arch. Neurol. & Psychiat.* 39: 1293 (June) 1938.

1. Mortality Record of the First Six Months of 1938, Statistical Bulletin, Metropolitan Life Insurance Company 19: 3 (July) 1938.

# ORGANIZATION SECTION

## WHERE ARE HOSPITALS MOST NEEDED?

In determining whether and where there is need of additional hospital facilities, it is obviously necessary first to ascertain the extent to which existing facilities are being utilized. In the accompanying table the states are arranged in the order of the number of their general hospital beds per thousand of population. Mississippi, having the least hospital facilities, has 1.4 beds per thousand. At the other end of the scale, the District of Columbia has 8.6 beds per thousand, many of which, however, serve not the inhabitants of the district only but federal employees throughout the country.

Dividing the states into groups having hospital facilities in the ratio of 1:2, 2:3, 3:4, and so on beds per thousand, the utilization of these facilities in each group steadily rises as the number of hospital beds increases. Six states with from 1 to 2 beds per thousand show a use of 60.45 per cent. The next group, ten states, with hospital beds running from 2 to 3 per thousand, report 64.61 per cent occupancy. The next group, seventeen states with a ratio of from 3 to 4 beds per thousand, keep these beds 67.67 per cent filled. In eleven states, with from 4 to 5 beds per thousand, utilization is 69.96 per cent. In four states having from 5 to 6 beds per thousand, occupancy drops to 62.68 per cent.

It is obvious, therefore, that hospital facilities are most used where they are most abundant and that where the ratio of beds to population is lowest the rate of occupancy is also lowest. In other words, hospitals have been built in response to a community demand and have not, as a rule, been built where there is no demand. Doubtless some states would show a higher rate of occupancy if additional funds were available for hospitalization of the indigent. In other states, education is needed to overcome popular prejudice. In any case, no single formula for hospital facilities is applicable to all parts of the country or to the habits and customs of all the people.

Utilization of Hospital Beds by States

	Beds per Thousand	Per Cent of Occupancy	Group Average
Mississippi.....	1.4	50.1	60.45
Arkansas.....	1.5	53.0	
Kentucky.....	1.7	58.1	
Georgia.....	1.8	66.4	
North Carolina.....	1.8	65.6	
Tennessee.....	1.9	69.5	
South Carolina.....	2.0	63.4	64.61
Alabama.....	2.1	64.4	
Oklahoma.....	2.1	55.2	
Texas.....	2.1	57.3	
Indiana.....	2.3	67.1	
Missouri.....	2.6	70.5	
Virginia.....	2.6	71.3	
West Virginia.....	2.7	62.1	
Ohio.....	2.8	73.1	
Iowa.....	2.8	61.7	
Florida.....	3.0	57.9	67.67
Louisiana.....	3.0	77.6	
New Jersey.....	3.0	72.2	
Delaware.....	3.1	71.8	
Kansas.....	3.2	62.3	
Pennsylvania.....	3.2	72.2	
Idaho.....	3.3	63.6	
Nebraska.....	3.3	62.4	
North Dakota.....	3.3	62.6	
Maine.....	3.4	70.9	
Michigan.....	3.4	78.6	
Vermont.....	3.4	67.3	
Connecticut.....	3.5	72.9	
South Dakota.....	3.5	56.7	
Illinois.....	3.6	69.2	
Utah.....	3.6	67.5	
Wisconsin.....	3.9	64.7	
Minnesota.....	4.0	67.9	69.96
New Hampshire.....	4.0	63.4	
Oregon.....	4.0	70.6	
Maryland.....	4.2	74.3	
New York.....	4.2	77.8	
Washington.....	4.3	64.7	
Rhode Island.....	4.4	79.5	
California.....	4.6	74.1	
Massachusetts.....	4.6	72.1	
Wyoming.....	4.7	62.6	
New Mexico.....	4.8	62.4	
Colorado.....	5.0	64.6	62.68
Arizona.....	5.1	64.8	
Nevada.....	5.1	59.8	
Montana.....	5.4	61.5	
District of Columbia.....	8.6	79.7	79.7

## WEST VIRGINIA'S ADULT PHYSICAL REHABILITATION PROGRAM

In West Virginia 923 men, who a comparatively short time ago were listed on public relief rolls as "unemployables" because they were suffering from minor physical ailments of one sort or other, now occupy places in private industry throughout the state. An additional 581 men, physically rehabilitated and no longer listed as unemployables, were awaiting placement, and 245 were convalescing in hospitals.

The economic outlook for these men was, every one agreed, doubly bleak. Not only had they been caught in the backwash of a worldwide depression, but the doors of private industry were closed to them because of their physical disabilities. Relief officials had accepted them as permanent charges.

Today, as a result of an experiment in human rehabilitation conducted by the West Virginia Department of Public Assistance in cooperation with the state medical society, a large percentage of these men have been restored to gainful employment.

The average cost to rehabilitate and restore to private industry each of these men has been \$94.35. The average cost to maintain a person on the state's relief rolls for one year is \$226.87.

Thus taking into consideration only these 923 men who have already resumed gainful employment, the state will, at the end of their second year of employment, realize a 100 per cent savings on its original investment, or \$209,401, the amount which would have been required to keep them on relief rolls. This figure does not take into consideration reimbursements for hospitalization, artificial limbs and other expenses which the recipients are expected to make to the state, or the fact that as additional men are absorbed by private industry the annual saving will be increased.

This is the economic side of the picture. Aside from the commercial aspects of the program, the vastly more important social aspects are apparent—new hope for the future, independence for individuals and their families; the effects are far reaching and incalculable.

In 1934 Charles Ritter, director of compensation for the West Virginia Relief Administration, set about interesting relief officials in physical rehabilitation. He succeeded in obtaining \$1,000 for the purpose of rehabilitating a small group of handicapped persons who would otherwise remain on relief rolls. The



experiment worked so convincingly that \$20,000 was earmarked for this work the following fall. Ritter was advised and assisted by a committee of physicians. Joe Savage, secretary of the West Virginia Medical Association, helped him work out details of the plan.

When the public welfare law creating the new state department of public assistance was passed in June 1936, the rehabilitation work was made a part of the law and the division of adult physical rehabilitation, with Mr. Ritter as supervisor, was set up in the new department.

A report issued as of April 30, 1938, shows that, of 1,951 persons referred to the division, 1,565 have been rehabilitated and are able to resume gainful employment, 245 are convalescing in hospitals and 141 refused to accept hospitalization. Of the 1,951 persons, sufferers from hernia led in number with 507. Second in numerical importance, 365, were victims of impaired vision. Those requiring artificial limbs or other aids for physical handicaps numbered 166. Fractures of various kinds were involved in 136 cases. Other handicap causes included (with the number of cases in each category) renal and rectal disorders 123, hemorrhoids sixty-one, cataracts sixty-eight, goiter eighty, gallstones forty-six, tumors forty-nine, varicose veins forty-six, salpingitis thirty-seven, kidney stones thirty-one, ulcers thirty-six, osteomyelitis twenty-four, trachoma twenty-three, nervous disorders twenty, appendicitis fourteen, fistula nineteen, mastoids eighteen, ankylosis twenty-one, paralysis twenty-one, abscessed lungs sixteen, prostate gland nine.

Total relief grants for these 1,951 cases, less 103 incurables, was \$419,253. The total cost of rehabilitation has been \$177,233, or 42 per cent. Thus the savings to the state above the cost of rehabilitation represents \$242,019, or 58 per cent. A more detailed tabulation, by Supervisor Charles Ritter, is given in the accompanying table.

To be eligible for rehabilitation, applicants must be at least 18 years of age, citizens of the United States and on relief rolls. Since the program is primarily designed to restore handicapped persons to private industry, only those capable of being thus absorbed are accepted.

### Details of Cost of Rehabilitation

General relief grants .....	
Public .....	
Estimate .....	
Administration expense .....	44,184.00
Total grants and cost of relief in 1,951 cases less 103 incurables, 1,848 cases .....	\$419,253.16
Total cost for adult physical rehabilitation operative cases .....	\$137,405.32
Total cost for artificial limbs and prosthetic appliances .....	27,045.00
Total administration expense .....	12,783.22
Total cost of adult physical rehabilitation—1,951 cases .....	\$177,233.54
Savings over cost of rehabilitation .....	\$242,019.62
General relief, public assistance, commodity grants and administrative expenses for 1,504 persons completely rehabilitated and able to resume gainful employment April 30, 1938, average cost per person, \$226.87 .....	\$341,212.48
Total cost of physical rehabilitation in 1,504 cases, average cost per case \$94.35 .....	141,902.40
Savings over cost of adult physical rehabilitation .....	\$199,310.08
General relief, public assistance, commodity grants and administrative expense for 923 persons who resumed gainful employment April 30, 1938, average \$226.87 .....	\$209,401.01
Total cost for 1,504 persons completely rehabilitated, average cost \$94.35 .....	141,902.40
Savings first year .....	\$ 67,498.61
Savings each succeeding year .....	209,401.01
Total savings end second year and each succeeding year on 923 persons returned to gainful employment April 30, 1938 .....	\$276,899.62
Total number of persons returned to gainful employment April 30, 1938 .....	923 or 61.4%
Total number of persons able to return but not yet returned to gainful employment April 30, 1938 .....	581 or 38.6%
Total able to return to employment April 30, 1938 .....	1,504 or 100%
Total persons approved to April 30, 1938 .....	1,951
Total persons completely rehabilitated .....	1,565
Total persons convalescing and in hospitals, April 30, 1938 .....	245
Total persons approved but refused hospitalization .....	141
Total .....	1,951

## GRADUATE MEDICAL EDUCATION

A PROGRESS REPORT OF THE FIELD STUDY ON GRADUATE MEDICAL EDUCATION IN THE UNITED STATES  
BEING CONDUCTED BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

### MASSACHUSETTS

The Committee on Postgraduate Medical Instruction of the Massachusetts Medical Society was organized in March 1933 with Dr. Frank R. Ober as chairman, Dr. Leroy E. Parkins as secretary and with an executive committee, of which Dr. Reginald Fitz is chairman. This group has remained essentially unchanged, the three physicians originally interested in postgraduate instruction still being members of the executive committee of five. On the committee on postgraduate instruction are representatives of all sections of the state society, the chairman of the standing committee of medical education and diplomas and public health, the editor of the *New England Journal of Medicine*, the state health commissioner, the state commissioner of mental disease, the deans of Boston University School of Medicine, Tufts College Medical School and Harvard Medical School, or their representatives, and the president of the Boston Medical Library. This group formulates plans and policies, organization and administrative details being left to the executive committee.

When this organization was perfected the Harvard Medical School abandoned its extension courses for physicians, since the Massachusetts Medical Society had recognized its duty to provide graduate instruction for the profession. From the start, the committee has had the active support of such groups as the state health department, the state department of mental disease and numerous community and private hospitals.<sup>1</sup>

The first postgraduate program was given in September 1933 in twenty-four centers of the state, local hospitals being utilized. A faculty of 174 physicians was carefully selected on their merits as postgraduate teachers. Two hundred and forty two hour sessions were given the first year. Each instructor received expenses but not an honorarium. Teams of two or three members visited various district societies in the state giving a series of ten weekly comprehensive review demonstrations and lectures. Physicians in each district had an opportunity to choose subjects from a list of twenty-two topics submitted by the postgraduate committee.

A local chairman was appointed for each district. He was nominated by the executive committee and approved by the district society. This physician had charge of local registration, preparation of clinical material, attendance and other local details. The state society appropriated \$1,000 yearly for this postgraduate enterprise, and each physician who registered for the ten lecture series paid a \$5 fee. The secretary of the executive committee received compensation for his services and clerical assistance. The headquarters of the state medical society became the headquarters of the postgraduate committee.

One thousand and two of the 4,406 practicing physicians active in the state society registered for instruction during the first year. There are 7,263 licensed physicians in Massachusetts. The second year such subjects as cardiovascular disease, nutrition, endocrinology, obstetrics and gynecology, surgery and industrial medicine were selected from a list submitted by the postgraduate committee. It became apparent as the plan progressed that representatives of district societies evidenced a feeling that local programs might be set up by the districts.

<sup>1</sup> L. Parkins, Leroy E.: The Relation of Postgraduate Medical Instruction to Public Health, J.A.M.A. 103:545 (Aug. 25) 1934.

themselves. It also seemed significant that instruction in certain subjects, such as venereal disease, was not chosen in spite of current propaganda regarding these diseases. The evaluation of instructors was recognized as a problem which required proper consideration.

In the fourth year in which the extension courses were given, reports of the committee on postgraduate instruction indicated that registration fees made up approximately 83 per cent of the revenue, that the remaining 17 per cent was made up by the state society's appropriation of \$1,000, and that at the end of that year, after all expenses had been paid, a credit balance remained.

The council of the state society voted in 1937 to suspend the activities of the postgraduate committee until it was determined what plans for continuing the education of physicians could be developed under the impetus of the Social Security Act. Since the United States Public Health Service and the Children's Bureau of the Department of Labor delegated the administration of postgraduate courses to the state department of health, the state commissioner of health, Dr. Henry D. Chadwick, requested the executive committee of the state society to assist in organizing a faculty and in directing a program of instruction in a manner similar to the programs of the preceding four years. It was arranged, therefore, to give a series of from eight to ten sessions in eighteen places throughout the state on a budget of approximately \$5,000. This allowed a \$25 honorarium plus travel expense for each instructor, providing for approximately 136 sessions. One thousand dollars was appropriated for the expense of administration. The plan was approved by the council of the state society and finally by the state federal agencies, thus providing opportunities for postgraduate instruction without charge for licensed physicians in Massachusetts, the state medical society underwriting the expenses of incidentals, printing of programs, clerical assistance and additional administrative aids. The original committee continued to function with these modified plans with the full cooperation of governmental agencies.

Of the subjects offered for discussion, it is interesting to note those chosen by district societies. Obstetric topics were requested approximately twice as often as the next subject, therapeutics, while instruction in pediatrics was third in demand. Lectures on pneumonia, scarlet fever, heart disease, rheumatic fever, syphilis and gonorrhea were each requested by about two thirds of the district societies. It is interesting to note also that, while instruction in tuberculosis was offered, none was requested. Fifty-six physicians now constitute the extension course faculty with five chairmen who are in charge of the various divisions of instruction. District societies are urged to present clinical cases whenever possible, all meetings being held in or near hospitals. Lantern slides, many in natural color, and teaching exhibits are being utilized in this extension course. Seven hundred and eight practicing physicians received training under the new plan during the past year, an increase of 35 per cent over the preceding year.

Harvard Medical School offers courses for graduates in such subjects as anatomy of the nose and throat, electrocardiography, fractures, minor surgery, medicine, obstetrics, orthopedic surgery and pediatrics. Each carries a fee, and attendance for each course is limited. Special postgraduate facilities have been set up also under a grant from the Commonwealth Fund of New York. These will be considered in a subsequent report.

The New England Medical Center, consisting of the Boston Dispensary, the Boston Floating Hospital and Tufts College Medical School, was established seven years ago with the aid of the Bingham Associates Fund. It provides opportunities for postgraduate instruction of New England physicians. Only physicians from Maine have been able thus far to take advantage of these opportunities.

Boston University School of Medicine cooperates actively with the state society in its extension course program. The dean, Dr. Alexander S. Begg, is secretary of the Massachusetts Medical Society. Members of the faculties of Boston's three approved medical schools comprise a major portion of the society's extension course faculty.

The Boston Medical Library has been the home of the Massachusetts Medical Society since 1879. The library is the depository for periodicals, reprints and books received by

the state society and by the *New England Journal of Medicine*. In company with other medical libraries of Boston, a cooperative plan to provide for nonduplication of reference and research material is being instituted. The annual library dues are \$15.

## COLORADO

One standing committee and five special committees in the Colorado State Medical Society are concerned with medical education. Three of these, namely the committee on mid-winter postgraduate clinics, the Rocky Mountain medical conference and the committee on cancer education, have been especially active.

The Midwinter Postgraduate Clinics have been held in Denver for three days each January from 1933 until 1937, when a December meeting was held instead of a January 1938 session. All physicians in Colorado and adjoining states are invited. A registration fee of \$2 was charged last year. Clinics, symposiums, lectures, ward walks and clinical pathologic conferences characterized the graduate assemblies. Morning clinics were held in private hospitals or at the University of Colorado School of Medicine, with demonstrations by staff members. Afternoon and evening sessions took place in a downtown hotel, which was used as headquarters for the meeting. Local physicians, many of whom are members of the staff of the school of medicine, and five out of state speakers participated last year. Instructors are selected by the state society's committee, which is entirely responsible for the conduct of the meetings. Guest speakers are provided with travel and hotel expenses. This year Dr. G. M. Blickensderfer is chairman of the clinics' committee of five.

Subjects for discussion are chosen after questioning Colorado physicians as to their needs. Last year clinics on pediatrics, renal and prostatic disease, fractures, tumors and obscure fevers and a movie program devoted to neuropathology and neurosurgery featured the meetings. Three hundred and three physicians attended in December 1937, which was four times as many as registered in 1933. Of these, 102 came from outside Denver. In addition to physicians, sixty-two medical students and nurses registered at the December 1937 clinics. Registration represented forty-five cities and towns in Colorado and thirteen cities and towns in six other states.

The annual two day Spring Clinics of the Pueblo County Medical Society were started in 1934. They are held each April by the county medical society with the sponsorship of the Colorado State Medical Society. Each of four local hospitals has a representative on the clinic committee, with Dr. George A. Unfug as chairman. The local committee is assisted by the Committee on Postgraduate Clinics of the Colorado State Medical Society and selection of instructors is made jointly. Each hospital offers its facilities and provides a half day's program and each invites an out of state guest speaker. Local physicians show cases, give illustrative lectures and demonstrate procedures of value in practice. This year the differential diagnosis of pulmonary tuberculosis, the diagnosis and treatment of diaphragmatic hernia, hypothyroidism and symptoms and diagnosis in general medicine were the subjects of major interest. Programs are mailed to all physicians in Colorado and to others in the states of New Mexico, Kansas, Nebraska, Wyoming and Utah. The registration fee of \$2 provides admission to three luncheons, a banquet and a smoker. One hundred and sixty-three physicians registered last April, ninety-three coming from outside Pueblo. Twenty-eight enrolled from Denver, and twenty-eight cities and towns and five states were represented.

The Western Slope Clinical Meeting was inaugurated and conducted by the Mesa County Medical Society at Grand Junction in April 1938 for physicians practicing on the western slopes of the Rocky Mountains. It will be held annually hereafter. The day's program was opened by the executive secretary of the Colorado State Medical Society. Lectures on obstetrics, anesthesia, diagnosis of heart disease and peptic ulcer, including treatment, round table discussion on obstetrics, and five motion pictures on surgical procedures comprised the program. All physicians in western Colorado and eastern Utah

were invited. Fifty registered, twelve counties in Colorado and three in Utah being represented.

The Rocky Mountain Medical Conference was organized in 1936 at the suggestion of Dr. George P. Lingenfelter, chairman of a committee of four members from the Colorado State Medical Society. It is the purpose of this conference, which is a joint effort of the state societies of Colorado, New Mexico, Wyoming and Utah, to foster discussion of problems in medicine and public health which are peculiar to this region. The medical society in each state has approved of the conference as a means of obtaining prominent educators to address the physicians of these states, which are so sparsely settled. The Colorado society acted as host for the first three day meeting held in Denver in July 1937, but no Colorado physicians participated in the program. It is planned to have similar meetings every two years, the next being scheduled for Utah in 1939.

Twenty out of state speakers discussed such subjects as gastro-enteric disease, cranial nerve lesions, syphilis, cancer, fractures, hand injuries, urologic diseases and obesity in children, endocrinology, ophthalmology, Rocky Mountain spotted fever, parasitic and infectious disease, chemical warfare injuries, aviation and automobile trailer problems in medicine and national legislation affecting physicians. From three to five round table luncheons were held each day in three hotels with guest speakers leading the discussions. Attendance at each luncheon was limited to fifty physicians. Ten scientific exhibits supplemented the program's illustrated lectures. Technical exhibits were shown by twenty-five firms at the hotel headquarters. The Denver Chamber of Commerce assisted in registration, the fee being \$3. A local theater donated its auditorium for morning sessions to amplify the hotel facilities.

Seven hundred and eighty-seven physicians, 400 from Denver, registered for the conference. Twenty-five states and the District of Columbia were represented, six or more physicians coming from Wyoming, Utah, Texas, New Mexico, Kansas, Nebraska, and Illinois. Dr. Kenneth D. A. Allen was chairman of the conference executive committee, with representatives from the four cooperating states. Travel and hotel expenses, but not honorariums, were paid with funds derived from the commercial exhibits, donations from most of Colorado's county medical societies, special medical organizations and individuals. The city council of Denver and the Denver Convention and Tourist Bureau also contributed. Registration fees and the sale of luncheon and dinner tickets provided the remainder of the \$6,550 collected, which was more than sufficient to finance the effort.

The committee on cancer education of the state medical society was formed in 1932 to supply component medical societies with teams of from three to five physicians for training their members in the early recognition and treatment of cancer. Since 1935 every society has been addressed one or more times by a physician or surgeon, pathologist and radiologist on cancer of the cervix, breast and/or gastro-enteric tract. Eighteen of the twenty-eight component societies in the state were visited last year. Dr. Charles B. Kingry, acting chairman of the committee, with the aid of eight other members and special counsel, is preparing a handbook on the diagnosis and treatment of cancer for distribution to practicing physicians. An outline of examination procedures has been sent to members of the state society urging complete examinations in all suggestive cases.

The Medical Society of the City and County of Denver established a medical library in 1910 by effecting a merger with the Colorado Medical Library and the Denver Academy of Medicine Library. Sixteen hundred volumes were added by the Colorado group, and the academy supplied 6,000 volumes in addition to cash and securities. The Colorado State Board of Health earlier had contributed about 2,000 volumes to the academy. The state medical society and private contributions made possible subscription to foreign and domestic journals. These were supplemented by donations from members of the profession. The library is now jointly supported by the county and state medical societies, and its facilities are available to any member of the state society. It is housed in

the annex to the Metropolitan Building, Denver, and is maintained by dues of members plus a \$500 annual appropriation from the state society. All books and periodicals received by the state society are deposited, the total number of texts on hand in January 1938 being 14,983. Two hundred and sixty-three periodicals are received currently. During 1937, 9,029 patrons, more than three fourths of them physicians, visited the library, borrowing 8,105 items.

The Colorado State Board of Health Division of Maternal and Child Health sponsored postgraduate courses in obstetrics and pediatrics in collaboration with the committee advisory to the department of health of the state society, of which Dr. J. W. Amesse is chairman. These courses were given in the northeastern and northern parts of the state during March and April 1937. Three pediatricians and three obstetricians gave ten two hour illustrated lectures over five weeks in four towns. Five lecture and clinic sessions were devoted to obstetrics and five to pediatrics. These were given from 4 to 10 p. m. on one day each successive week, one hour being allowed for dinner. The instructors and subjects were suggested by the Children's Bureau of the United States Department of Labor; two of the lecturers were members of the staff of the University of Colorado School of Medicine and four were faculty members of out of state universities. Courses were announced by post cards and letters distributed by the secretary of the state board of health, Dr. R. L. Cleere. Local physicians in the six counties where courses were given were responsible for local arrangements. They were invited to present interesting cases and to suggest problems for discussion. Of the 179 physicians licensed in this area, 114 enrolled, including some from five adjoining counties. The attendance at each meeting varied from twelve to eighteen, including a few public health nurses and medical students. There were no registration fees, the course being financed with federal funds.

The University of Colorado School of Medicine, in cooperation with the extension division of the university, formerly sent members of the faculty throughout the state to address component medical societies. This effort has now been taken over by the state medical society with the continued cooperation of the school of medicine. On request, members of the faculty are available for graduate programs. In the six years prior to 1933, annual clinics were given for medical graduates. At these clinics the average registration of physicians residing outside of Denver was 127, and in 1932 it was 106, thirty-one of whom came from towns with populations of less than 5,000. The school of medicine's annual clinics are now succeeded by the state society's midwinter clinics.

At the last annual meeting of the state medical society, three opening morning sessions were devoted to clinical pathologic conferences. Round table luncheon discussions were held each day at which a guest speaker presided. Six hundred and nine physicians of the 1,135 members of the state society attended. There are 1,923 physicians registered in Colorado. Approximately 85 per cent of the physicians practicing in Colorado are members of the state medical society.

## UTAH

The committee on medical education and hospitals of the Utah State Medical Association consists of six physicians of Salt Lake City and six from other sections of the state. Dr. L. L. Daines, dean of the University of Utah School of Medicine, Salt Lake City, is chairman. During the first half of 1938 a member of the faculty of the medical school addressed each of six component medical societies throughout the state. Clinical pathologic conferences are held in four of the hospitals in Salt Lake City and in one Ogden hospital which members of the respective staffs may attend. The university library is used as a depository for books and periodicals received by the Salt Lake County Medical Society, which spends \$500 a year for maintenance. In turn, physicians may use the complete facilities of the medical school and general university library. The anatomic laboratory of the medical school provides cadavers for physicians desiring to perfect their operative technique or who are anxious to obtain additional basic science training.

At the 1937 annual meeting of the Utah State Medical Association an out of state obstetrician and pediatrician each conducted four illustrated lectures during two days. The program was financed with federal funds and was sponsored jointly by the Utah State Board of Health. Of 175 physicians who registered, sixty-five were from Salt Lake City and the remainder came from all but four of the twenty-nine counties of the state.

This year an out of state pediatrician is lecturing and giving infant conference demonstrations throughout Utah. From June 21 to August 20, fourteen or fifteen centers in five of the six health districts of the state are being visited. Health officers make local arrangements in each section. Personal conferences with physicians, consultations on request and lectures before

component medical societies are included. This effort is sponsored by the Division of Maternal and Child Health of the Utah State Board of Health and is financed with federal funds.

A representative from the division of venereal disease control of the state board of health met with the committee on syphilis and venereal disease of the state medical association in 1936 to consider a program for informing the public and the profession regarding advances in the knowledge of venereal diseases. Since then the board of health has conducted a public education campaign, but as yet similar consideration of the profession has not been given.

The annual meetings of the state medical association were attended by 310 physicians in 1937 and 316 in 1936. There are 443 members of the 567 physicians licensed in Utah.

## OFFICIAL NOTES

### RADIO BROADCASTS

The fourth series of programs broadcast in dramatic form portraying fictitious but typical incidents of significance in relation to health by the American Medical Association and the National Broadcasting Company entitled "Your Health" will begin Wednesday October 19 and run consecutively for thirty-six weeks. The program will be broadcast over the Blue network of the National Broadcasting Company each Wednesday at 2 p. m. eastern standard time (1 p. m. central standard time, 12 noon mountain time, 11 a. m. Pacific time).

These programs will be broadcast on what is known in radio as a sustaining basis; that is, the time is furnished gratis by the radio network and local stations and no revenue is derived from the programs. Therefore local stations may or may not take the program, at their discretion, except those stations which are owned and operated by the National Broadcasting Company.

The programs to be broadcast in the first group, together with their dates and their topics, are as follows:

October 19, What is Health?  
October 26, Growing Strong.  
November 2, Seeing and Hearing Well.  
November 9, Healthier Boys and Girls.

The following is a list of the stations connected with the Blue network of the National Broadcasting Company, but no assur-

ance can be given as to how many of these stations will broadcast the program "Your Health":

#### Basic Blue Network

WJZ	New York	KDKA	Pittsburgh	KSO	Des Moines
WBZ	Boston	WHK	Cleveland	KOIL	Omaha
WBZA	Springfield	WSPD	Toledo	WREN	Kansas City
WEAN	Providence	WXYZ	Detroit	WLAV	Cincinnati
WICC	Bridgeport	WOWO	Fort Wayne	WCKY	Cincinnati
WFIL	Philadelphia	WENR-WLS	Chicago	WSAI	Cincinnati
WBAL	Baltimore	KWK	St. Louis	WRTD	Richmond
WMAL	Washington	WMT	Cedar Rapids	WABY	Albany
WYSR	Syracuse	WTCN	Minneapolis	WJTN	Jamestown, N.Y.
WHAM	Rochester		St. Paul	WLEU	Erie
WEER	Buffalo				

#### Supplementary Facilities

WFEA	Manchester, N.H.	WSOC	Charlotte	WIBA	Madison
WBRE	Wilkes-Barre	WFBC	Greenville	KVOD	Denver
WSAN	Allentown, Pa.	WVNC	Asheville	KLO	Ogden
WYRK	York, Pa.	WIS	Columbia	KIDO	Boise
WCOL	Columbus, O.	WCSC	Charleston	KGIR	Butte
WGL-WOVO		WJAX	Jacksonville	KPFA	Helena
		WFLA-WSUN	Tampa	KGHL	Billings
WOOD	Fort Wayne	WIOD	Miami	KSEI	Pocatello, Ida.
WOWW	Grand Rapids	WMC	Memphis	KTFI	Twin Falls, Ida.
WGBF	Terre Haute	WSB	Atlanta	KGO	San Francisco
WEBC	Evansville	WBRC	Birmingham	KECA	Los Angeles
	Duluth	WJDX	Jackson	KEX	Portland, Ore.
	Superior	WSMB	New Orleans	KJR	Seattle
KSOO-KELO		WALA	Mobile	KGA	Spokane
KANS	Sioux Falls, S.D.	WROL	Knoxville	KFBK	Sacramento
WTAR	Wichita	WAVE	Louisville	KWG	Stockton
WPTF	Norfolk	WSM	Nashville	KMJ	Fresno
	Raleigh	WTMJ	Milwaukee	KERN	Bakersfield

## WOMAN'S AUXILIARY

The following officers have been elected by the Woman's Auxiliary to the American Medical Association for 1938-1939:

Officers:

President—Mrs. Charles C. Tomlinson, 5215 Jackson Street, Omaha.  
President-Elect—Mrs. Rollo K. Packard, 6901 Paxton Avenue, Chicago.  
First Vice President—Mrs. Frank N. Haggard, 615 East Olmos Drive, San Antonio, Texas.  
Second Vice President—Mrs. David W. Thomas, 112 West Main Street, Lock Haven, Pa.  
Third Vice President—Mrs. L. S. Merrill, 2761 Harrison Boulevard, Ogden, Utah.  
Fourth Vice President—Mrs. J. R. Westaby, 621 Washington Avenue North, Madison, S. D.  
Treasurer—Mrs. E. E. Fisher, Multnomah County Hospital, Portland, Ore.  
Recording Secretary—Mrs. James A. Downing, 1246 Forty-Sixth Street, Des Moines, Iowa.  
Corresponding Secretary—Mrs. James M. Woodward, 2132 South Twenty-Fourth Street, Lincoln, Neb.  
Directors, one year—Mrs. Augustus S. Kech, 1221 Twelfth Avenue, Altoona, Pa.  
Mrs. Carl A. Surran, 5 North Brunswick Avenue, Margate City. N. J.  
Mrs. John W. Burns, 309 East Broadway, Cuero, Texas.  
Mrs. Leslie J. Paul, 259 Douglas Street, Salt Lake City.

Directors, two years—Mrs. J. C. Geiger, 50 Ventura Avenue, San Francisco.

Mrs. E. W. Veal, 1936 San Marco Boulevard, Jacksonville, Fla.

Mrs. R. E. Mosiman, 2706 Tenth Avenue North, Seattle.

Chairmen of Standing Committees:

Archives—Mrs. Robert B. Homan, 1837 Grandview, El Paso, Texas.  
Exhibits—Mrs. Ily R. Beir, 114 South Virginia Avenue, Atlantic City, N. J.

Finance—Mrs. James Blake, Hopkins, Minn.

Historian—Mrs. E. A. Barnes, Albany, Ky.

Hygeia—Mrs. James D. Lester, 268 Twenty-First Avenue South, Nashville, Tenn.

Legislation—Mrs. Arthur A. Herold, 1166 Louisiana Avenue, Shreveport, La.

Membership Award—Mrs. Herbert B. Henkel, 2135 Wiggins Avenue, Springfield, Ill.

Parliamentarian—Mrs. Rogers N. Herbert, Franklin Road, Nashville, Tenn.

Press and Publicity—Mrs. James P. Simonds, 25 East Walton Street, Chicago.

Printing and Supplies—Mrs. E. D. Lamb, Klamath Falls, Ore.

Program—Mrs. V. E. Holcombe, 1635 Quarrier Street, Charleston, W. Va.

Public Relations—Mrs. Henry Raile, 19 South Wolcott Avenue, Salt Lake City.

Revisions—Mrs. James F. Percy, 1030 South Alvarado Street, Los Angeles.

## MEDICAL ECONOMIC ABSTRACTS

## EDUCATORS STUDY EDUCATION

Because some one is always comparing education and medicine, the conclusions of educators on our present system of education deserve some attention. The National Education Association of the United States and the American Association of School Administrators joined in appointing an Educational Policies Commission, which has recently presented its conclusions.<sup>1</sup> It is interesting to note at how many points the educational and the medical profession agree.

The educators criticize our present educational system because it has failed "to adapt the curriculum of the schools to the greatly varied abilities, interests and vocational outlooks of the students in attendance." In other words, pupils, like patients, need attention to their individual characteristics rather than mass treatment.

The invasion of business by the schools is criticized. Institutions that "are organized on a proprietary basis and are run for profit . . . have no place in our system of education."

The attitude of the educators that schools should not invade the field of the medical profession is shown in the following comment:

"Another example of an important service lying outside of the range of school activities is that of medical or surgical service. The schools may properly inquire concerning the physical well-being of their pupils, but the correction of remediable defects or the medical and surgical services should lie within the province of the public health agency or the private physician, surgeon or dentist."

Teachers and physicians are agreed in their opposition to uniform national programs. The report says:

"The nation is committed to a decentralized system of administration and control in education. . . ."

"Centralization in the control, administration and financing of education is very apt to lead to a mediocre school system and a lack of progressive development of the program of public education."

Even when federal aid is urged for certain phases of education, this is accompanied by opposition to national control of education. The system of federal control based on the "matching by the state of the moneys distributed to them by the federal government" is denounced as an "insidious type of control."

Finally, the educators, no less than the members of the medical profession, insist that educational matters and even "administrative details should always be left to the professional executive."

## SICKNESS INSURANCE IN NORWAY

The provisions of the sickness insurance law in Norway are described in the Monthly Labor Review of the United States Department of Labor (46:1122 [May] 1938) on the basis of data furnished by the American consulate at Oslo, Norway.

The basic law establishing the present system was enacted in 1930 and has been revised five times since, the latest revision being made on June 17, 1937. The law provides for both compulsory and voluntary insurance. The administration is largely in the hands of municipal funds, of which there were 759 in 1936; there were also thirty-four recognized private funds. All wage earners of 15 years of age or over with an annual income of less than 6,000 kroner (a little less than \$1,500) must belong to an insurance fund or an authorized sick-benefit fund. Of the total contributions required, the insured pays six tenths, the employer one tenth, the state two tenths and the municipality one tenth. The contributions of individuals vary according to six wage classes, and the cash benefits vary in the same manner.

Medical care may be given either in the form of free medical attendance by physicians with whom the funds have contracts

1. The Structure and Administration of Education in American Democracy, by the Educational Policies Commission of the National Education Association of the United States and the American Association of School Administrators, Washington, D. C., 1938.

or as a refund to the members for medical care in accordance with rates fixed by the crown. The members have freedom of choice of physician. If the fee charged is higher than that allowed by the insurance funds, the member must pay the difference between the authorized fee and that charged by the physician consulted. All compulsory and voluntary members of the sickness insurance fund and their dependents, including children and foster children under 16 years of age, are entitled to benefits regardless of age.

The central administrative body is a state insurance institution under the direction of a board of five members. The expenses of the institution in connection with the administration of sickness insurance are paid by the state. In 1936 there were 896,553 members of sickness insurance funds, of whom 755,084 were under the compulsory plan and 141,469 were voluntary members. In 1936 there were 249,791 cases of sickness among these members for which sickness benefits were paid, which works out at an average of about one case of sickness for every 3.5 persons.

## MATERNAL HEALTH AND THE ILLINOIS STATE MEDICAL SOCIETY

When the Social Security Act became a law in 1935 there were three sections referable to health, namely maternal and infant welfare, aid to crippled children and the expansion of the general health program. In all of these divisions the United States Children's Bureau and the United States Public Health Service, charged with their administration, created advisory committees of medical and public health authorities and encouraged the several states to procure active cooperation from the state medical societies. How such cooperation can be worked out is well exemplified by the report of the Maternal Welfare Committee of the Illinois State Medical Society.<sup>1</sup> In Illinois the governor appointed the Committee of Maternal Welfare, and the state director of public health, the chief of the state department bureau of child welfare and public health nursing and the chairman of the educational committee of the Illinois State Medical Society were members, under the chairmanship of the professor of obstetrics at the University of Illinois College of Medicine.

Under this committee refresher courses in obstetrics and pediatrics were arranged to be presented before many county medical societies under the supervision of the educational committee of the state medical society. A field consultant for the Committee of Maternal Welfare was appointed, and he arranged with many county medical societies for the development of these courses. In addition, postgraduate courses in obstetrics and pediatrics were conducted at the University of Illinois College of Medicine during the summer of 1937. The state medical society Maternal Welfare Committee was developed with one member from each of the eleven councilor divisions.

The state medical society Maternal Welfare Committee functioned under four major objectives, namely the refresher courses, an educational program for the public on antepartum care, sponsorship by organized medicine of the health activities under the Social Security Act and furtherance of the summer postgraduate courses. District meetings were held in each district and efforts were made to bring to the lay public the true facts about maternal mortality in the United States as compared with other countries. In this connection it was pointed out that, in the United States, deaths occurring during the puerperal state are invariably classed as maternal deaths including criminal abortions, deaths from intercurrent infections during pregnancy and deaths due to other causes, whereas in many countries the actual causes of such deaths are properly reported under their several classifications.

The Committee on Maternal Welfare is embarked on an eight point program including emphasis on adequate antepartum care, greater attention to eugenics rather than to birth control,

1. Illinois M. J. 74: 44 (July) 1938.



refresher courses, studies on the preventability of maternal, fetal and early infant deaths, in Illinois a physicians' speakers' service for lay groups in each county, public meetings in each county, routine Wassermann tests for all prospective mothers and cooperation with women's groups.

This program is projected over a five year period and it is believed that it will result in better maternal and infant health in the state of Illinois with a maximum participation by practicing physicians and with the cooperation of official health agencies and citizens' groups, especially women's groups.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

### ALABAMA

**Hospital News.**—Dr. Quitman U. Newell, St. Louis, conducted a gynecologic operative clinic at the Hillman Hospital, Birmingham, August 1.

### ARKANSAS

**Society News.**—The Southeast Arkansas Medical Society was recently addressed at McGehee by Drs. Lee Vallette Parnley on work for crippled children and Grady W. Reagan, diagnosis of diseases of the upper urinary tract; both are from Little Rock. There was also a discussion on the study of medical care.—At a meeting of the Lawrence County Medical Society in Hardy recently the speakers included Drs. Hubert K. Turley, Memphis, Tenn., on pyelitis; John J. Monfort, Batesville, local anesthesia, and John L. Jelks, Memphis, rectal fistulas.—Drs. Davis W. Goldstein and Everett C. Moulton, both of Fort Smith, discussed syphilis and syphilitic manifestations in ophthalmology respectively before the Benton County Medical Society in Rogers August 11.—At a meeting of the Independence County Medical Society in Batesville August 8 Dr. Elnis Q. Wyatt, Corpus Christi, Texas, spoke on "Acute Suppurative Empyema."—Dr. Clyde D. Rodgers, Little Rock, discussed antepartum care before the Fourth Councilor District Medical Society in Warren August 18.

### CALIFORNIA

**Society News.**—The staff of the Weimar Joint Sanatorium, Weimar, presented a symposium on compression therapy in the treatment of tuberculosis at a recent meeting of the Placer County Medical Society.—The Ventura County Medical Society was addressed recently by Dr. Carl E. Ebert, Los Angeles, on "Pitfalls for the General Practitioner in the Practice of Urology."—At a dinner meeting of the Hollywood Academy of Medicine in Hollywood, August 11, Capt. Basil Webb, big game hunter and adventurer, spoke on "Fetishes, Facts and Fancies of Savage Medicine."—Dr. Ko K. Chen, Indianapolis, addressed a special meeting of the San Francisco County Medical Society September 15 on "Digitalis-like Preparations." The society was addressed September 13 by Drs. William L. Rogers on "Tuberculous Bronchitis—Its Role in Collapse Therapy"; George B. Miller, "Early Diagnosis and Control of Tuberculosis," and Sidney J. Shipman, "Pneumothorax and the General Practitioner"; all are of San Francisco.—At a meeting of the Los Angeles Society of Neurology and Psychiatry September 21, Drs. Rupert B. Raney and David L. Reeves, Los Angeles, discussed "Acute Pneumococcus Metastatic Spinal Epidural Abscess" and "Glioma of the Optic Nerve" respectively.

**Laboratory for Study of Sylvatic Plague.**—The University of California will establish a laboratory for sylvatic plague with a gift of \$24,000 from the Rosenberg Foundation of San Francisco. Fourteen thousand dollars will be used to construct a building and the remainder for research and personnel. The laboratory will be staffed by the Hooper Foundation for Medical Research. Work will be concentrated on rodent fleas. Both the state and the university have been active in the campaign against sylvatic plague for years. Interested agencies have formed a Sylvatic Plague Committee, which has devoted itself to the collection of evidence of sylvatic

plague everywhere on the American continent and is taking measures to combat it. Anti plague serum is being kept constantly on hand at the Hooper Foundation. Four nonfatal human cases have been bacteriologically proved thus far. The Hooper Foundation has counted thirteen rodents and rodent varieties that suffer from spontaneous plague, the list including squirrels, marmots, chipmunks, prairie dogs, mice and rats. The West Coast became infected in the course of the pandemic of 1894, which originated in Hongkong. It is assumed that rats conveyed the seed to the shores of California and spread it to the squirrels. It has now reached Montana and appears to be working eastward.

### CONNECTICUT

**Personal.**—Dr. William Sherman Randall has been appointed health officer of Shelton to complete the unexpired term of the late Dr. J. Eugene Black.

**Childs Memorial Research Fund.**—The major portion of the income of the Jane Coffin Childs Memorial Fund for Medical Research will be used for the next three years to finance a study of cancer at Yale University, it was announced in the fund's first annual report. In addition, grants-in-aid have been and will be made for cancer research in other institutions in this country and abroad. The primary purpose of the fund at present is to support research into the causes, origins and treatment of cancer, with emphasis on the causes and origins. Therapeutic investigations have been considered from the point of view of their contribution to knowledge of causes and origins. When the fund was established in 1937 the amount of the principal was appraised at \$3,343,556.

### FLORIDA

**Society News.**—Dr. James H. Putman, Miami, discussed "Pain in the Right Hypochondrium, Some Factors in Its Production," before the Dade County Medical Society August 2.—At a meeting of the DeSoto-Hardee-Highlands County Medical Society in Sebring recently Dr. Allen A. Pouchier, Wauchula, discussed symbiosis.

**Personal.**—Dr. James M. Hoffman, Pensacola, president of the Escambia County Medical Society, presented Dr. Juriah Harris Pierpont, Pensacola, with a scroll signed by members of the society, August 2, to observe his completion of fifty years' practice in the county.—Dr. Henry C. Lochte, Bay Pines, has retired as chief of the outpatient division at the Veterans' Administration Facility, it is reported; he has held the position since 1933.—Dr. James Maxey Dell Sr., Gainesville, has been appointed district deputy grand exalted ruler of the Benevolent and Protective Order of Elks for the Florida north area.

### GEORGIA

**Personal.**—Dr. Luther A. Brendle, Clinton, Tenn., has been appointed health officer of Dodge County, succeeding Dr. Johnnie L. Gallemore, Eastman, resigned.—Dr. Frank K. Boland has been elected president of the Atlanta Historical Society.

**Chattahoochee Valley Meeting.**—Dr. John S. Turberville, Century, Fla., was elected president of the Chattahoochee Valley Medical Association at its annual meeting at Radium Springs, Albany, July 14. Drs. Guy J. Dillard, Columbus, and Clarence R. Bennett, Eufaula, Ala., were selected as vice presidents. Dr. Frank K. Boland, Atlanta, will serve two more years to complete his five year term as secretary-treasurer. Dr. James G. Lyerly, Jacksonville, Fla., delivered the W. J. Love memorial address on "Prefrontal Lobotomy."

### ILLINOIS

**Society News.**—The Henry County Medical Society was addressed in Kewanee September 8 by Dr. Charles E. Galloway, Evanston, on obstetrics. A paper on pediatrics was read by Dr. John A. Bigler, Highland Park.—Dr. M. Herbert Barker, Chicago, discussed "Nephritis and Edema" before the Kankakee County Medical Society at Kankakee September 8.—At a meeting of the county medical society at Effingham, September 13, Dr. Frank Deneen, Bloomington, spoke on "Diagnosis and Medical Treatment of Liver and Gallbladder Conditions."—Dr. Herbert E. Schmitz, Chicago, discussed gynecology before the Coles-Cumberland County Medical Society at Mattoon September 14.—The Marion County Medical Society was addressed at Centralia September 15 by Dr. Arthur H. Conley, Chicago, on "Injuries to and Fracture of the Bones."—At a meeting of the Peoria

County Medical Society at Peoria September 20 Drs. Ford K. Hick and Conrad S. Sommer, Chicago, will discuss various aspects of internal medicine.—Dr. Raymond A. Tearnan, Decatur, will address the Christian County Medical Society September 21 on "Endocrine Factors in Various Gynecologic Disorders."—A symposium on pediatrics and obstetrics will be sponsored by the Joe Davis and Carroll County Medical Societies at Elizabeth September 21; the speakers will be Drs. Arthur H. Parmelee, Oak Park, and William F. Mengert, Iowa City, on "Diseases of the Newborn" and "Treatment of Prolonged Labor" respectively.

#### Chicago

**Dr. Moss Retires.**—Dr. Daniel B. Moss, chief medical officer of the Chicago, Burlington and Quincy Railroad since 1924, retired on pension September 15 after forty years' service with the road. He will be succeeded by Dr. Onis H. Horrall, general surgeon for the line, who has been appointed chief surgeon in charge of all surgical work of the company. Born in Palmyra, Mo., Dr. Moss graduated at the Missouri Medical College, St. Louis, in 1896 and engaged in the private practice of medicine in Hannibal, Mo. He became associated with the medical department of the Burlington in St. Joseph, Mo., June 7, 1898. In 1903 he was transferred to the general headquarters at Chicago and in April 1924 was appointed chief medical officer. Dr. Horrall graduated at Rush Medical College in 1920 and entered private practice in Casper, Wyo. He was appointed division surgeon for the Burlington at Sheridan, Wyo., in 1922, moving to Chicago in 1924. He has served as general surgeon for the Burlington since Oct. 13, 1937. Dr. Raymond B. Kepner, who joined the company's medical department in St. Joseph, Mo., in January 1920, has been appointed medical officer of the company and medical director of the relief department. He graduated at Rush in 1917.

#### INDIANA

**Division of Nutrition Established.**—The bureau of maternal and child health of the state department of health established a division of nutrition August 1 with Miss Estelle Nesbitt, New Richmond, in charge. For the present it is planned to confine the activities of the nutrition service for the most part to cooperation with the demonstration branch of the dental health program in district health unit number 4, which includes the counties of Switzerland, Ohio, Dearborn, Ripley and Jefferson. During November nutrition institutes will be conducted for public health nurses. Work of the new division will include study of the prevalence of nutritional diseases in the state and cooperation with local health agencies in solving the nutritional needs of the community. Special attention will be paid to expectant mothers. Representatives of various agencies in the state make up an advisory council to the director of new division.

#### IOWA

**Society News.**—At a meeting of the Upper Des Moines Medical Society in Okoboji August 4, the speakers were, among others, Drs. William D. Paul, Iowa City, on "Recent Advances in the Treatment of Diabetes"; Albert S. Welch, Kansas City, Mo., "Intestinal Protozoa"; Archibald F. O'Donoghue, Sioux City, "Fractures of the Hip Treated by Internal Fixation"; Lealdes M. Eaton, Rochester, Minn., "Pain Characteristic of Various Neurologic Diseases"; Hiram Winnett Orr, Lincoln, Neb., "Prevention and Control of Wound Infection and Interpretation of Asepsis," and Louis A. Buie, Rochester, Minn., "Anal Pruritus."

#### KANSAS

**Society News.**—The Sedgwick County Medical Society held its twelfth annual golf tournament September 16; a new trophy was presented this year by Mr. Mac Cahal, Chicago, formerly executive secretary of the society and now executive secretary of the Inter-Society Committee for Radiology.—Dr. Bertrand I. Krehbiel, Topeka, discussed a case of tetanus with recovery in a child 21 months old before the Shawnee County Medical Society in Topeka September 6.

#### KENTUCKY

**State Medical Meeting in Louisville.**—The Joseph N. McCormack Memorial Meeting of the Kentucky State Medical Association will be held in Louisville October 3-6. A feature of the meeting will be the unveiling of a plaque and dedication of the new building of the state board of health as a memorial to the late Dr. McCormack, known as "the father of

public health, preventive medicine and medical organization in Kentucky." The guest speakers will be:

Dr. Frank H. Lahey, Boston, Management of Lesions of the Colon and Rectum.  
Dr. Ernest E. Irons, Chicago, Lobar Pneumonia.  
Dr. Daniel C. Elkin, Atlanta, Ga., Cholecystitis—When and If Operable.

Dr. Harry Stack Sullivan, New York, president of the William Alanson White Psychiatric Foundation, will be the speaker at the annual banquet Wednesday evening, when the president of the association, Dr. William E. Gardner, Louisville, will give his official address. Dr. Clark Bailey, Harlan, will give the annual oration in medicine and Dr. Francis M. Massie, Lexington, the oration in surgery. The annual golf tournament will be held at the Louisville Country Club Monday October 3; there will also be a trapshooting contest at the Highland Park Gun Club the same day.

#### MAINE

**Society News.**—At a meeting of the Aroostook County Medical Society in Houlton recently, the speakers included Dr. Delmer Allan Craig, Bangor, on "The Standardized Hospital and Its Benefit to Doctor and Patient."—Among others, Dr. Robert H. Aldrich, Boston, addressed the Piscataquis, Aroostook, Somerset, Kennebec and Penobscot county medical societies at a joint meeting July 21; his subject was "Aniline Dye Treatment of Burns."

#### MASSACHUSETTS

**Dr. Chadwick Resigns as State Health Commissioner.**—Dr. Henry D. Chadwick, since 1933 health commissioner of Massachusetts, has resigned to become medical director of the Middlesex County Sanatorium at Waltham, according to the *New England Journal of Medicine*. A graduate of Harvard University Medical School, Dr. Chadwick practiced in Waltham from 1896 to 1905, then was superintendent of the Vermont Sanatorium for Tuberculosis, Pittsford, 1907-1909, holding a similar post with the Westfield (Mass.) State Sanatorium for tuberculous children from 1909 to 1929, when he went to the Detroit department of health as tuberculosis controller. He served as president of the American Sanatorium Association in 1930, and of the Michigan Tuberculosis Association, 1932 and 1933.

#### MICHIGAN

**Examinations for State Positions.**—The Michigan Civil Service Department announces that examinations will be held in the immediate future for several medical positions. The positions open are resident institution physician, resident hospital roentgenologist, hospital physician, sanatorium physician and public health physician, at salaries ranging from \$150 to \$400 a month, less maintenance where it is provided. Those interested are urged to communicate at once with the civil service department, 508 North Grand Avenue, Lansing, for application blanks and further information as to the requirements.

#### MISSOURI

**Annual Fall Conference.**—The sixteenth annual fall clinical conference of the Kansas City Southwest Clinical Society will be held at the Municipal Auditorium, Kansas City, October 3-6. Guest speakers will include:

Dr. Thomas Leon Howard, Denver, Colo., How Should the General Physician and Surgeon Evaluate Bladder Symptoms in His Patients?  
Dr. William J. Diekmann, Chicago, Treatment of Nonconvulsive Toxemias of Pregnancy.  
Dr. George T. Pack, New York, Indications for Surgery and Indications for Irradiation in the Treatment of Cancer.  
Dr. Isidor S. Ravdin, Philadelphia, Problems of Long Standing Gallstone Disease.  
Dr. William D. Sansum, Santa Barbara, Calif., The Causes, Dangers and Treatment of Overweight.  
Dr. Elmer L. Seyringhaus, Madison, Wis., Diagnosis of Causes of Menstrual Disturbances.  
Dr. Lawrence Reynolds, Detroit, Passage of Foodstuffs Through the Gastrointestinal Tract as Determined by Chemical and Roentgenologic Methods.  
Dr. Frank R. Ober, Boston, Management of Lane Joints as a Result of Trauma.  
Dr. Chester A. Stewart, Minneapolis, Evolution of Tuberculosis in Children.  
Dr. Louis J. Karnosh, Cleveland, Neuritis, Neuralgia and Neurosis.  
Dr. James B. Costen, St. Louis, Mandibular Joint Syndrome.  
Dr. Grady E. Clay, Atlanta, Ga., Pathologic Changes in the Fundus Oculi in Essential and Malignant Hypertensive Disease.  
Dr. Arthur E. Hertzler, Halstead, Kan., The Goiter Heart.

Round table luncheons will be held each day. A feature of the meeting Monday evening will be the discussion of a "mys-

tery case." The history, physical examination and laboratory findings of a baffling case, taken from the records of a large eastern hospital, will be published in the program issue of the *Kansas City Medical Journal*. Every one is urged to read it carefully. A group of selected "key" men will be asked to occupy seats on the platform of the Little Theater. In addition, any physician present will be allowed to discuss the case presented. No one in the entire audience, except the chairman, will know the final diagnosis of the case. Men from the various specialties will be called from the audience for discussion.

### MONTANA

**Personal.**—Dr. Harry V. Gibson, health officer of the Eau Claire, Wis., county health unit, has been appointed health officer of Great Falls and Cascade County, it is reported.

### NEVADA

**State Medical Meeting at Reno.**—The thirty-fifth annual meeting of the Nevada State Medical Association will be held in Reno September 23-24 at the Bowers Mansion, under the presidency of Dr. Harry W. Sawyer, Fallon. The speakers will be:

- Dr. Albert H. Rowe, Oakland, Calif., Chronic Allergy in Medical Practice.
- Dr. Alson R. Kilgore, San Francisco, Postoperative Distention—Prevention and Treatment.
- Dr. Miley B. Wesson, San Francisco, Kidney Infections—Pyelographic Diagnosis.
- Dr. Ruggles A. Cushman, Talmage, Calif., Mental Disease as Met in General Practice.
- Dr. Philip King Brown, San Francisco, Complications of Pneumonia.
- Dr. Ernst Gehrels, San Francisco, Gastric and Duodenal Ulcer—The Case Against Gastro-Enterostomy.
- Dr. William H. Daniel, Los Angeles, Common Proctologic Disorders.
- Dr. Albert R. Da Costa, Reno, New Anesthetics and Methods; Carbon Dioxide Absorption with Cyclopropane.
- Dr. Lemuel R. Brigman, Reno, Congenital Syphilis: Intracscalp Method of Administering Sulfarsphenamine.

### NEW JERSEY

**Society News.**—Dr. Harold D. Harvey, New York, will address the Bergen County Medical Society, Englewood, September 20, on "Use and Abuse of Sulfanilamide."—Dr. William T. Lemmon, Philadelphia, addressed the Gloucester County Medical Society, Woodbury, September 15, on "Common Diseases Relieved by Surgical Operations on the Sympathetic Nervous System," and Dr. Edward Zeh Hawkes, Newark, president-elect of the Medical Society of New Jersey, "The Objectives and Administrative Policies of the Medical Society of New Jersey."

**Opening of Squibb Research Institute.**—The new Squibb Institute for Medical Research at New Brunswick will be officially opened October 11 with a special program. Mr. Carleton H. Palmer, president of E. R. Squibb and Sons, will give an address of welcome and Dr. John F. Anderson, director of the biologic laboratories, an address on the institute. Dr. George A. Harrop, newly appointed director of the institute, will introduce the following guest speakers:

- Dr. George R. Minot, Boston, Clinical Investigation.
- Dr. Russell M. Wilder, Rochester, Minn., Industrial Laboratories and Clinical Research.
- August Krogh, professor of animal physiology, University of Copenhagen, Denmark, Biology and Medicine in Cooperation.
- Dr. Abraham Flexner, Princeton, N. J., The Usefulness of Useless Knowledge.

### NEW YORK

**District Meeting.**—The Seventh District Branch of the Medical Society of the State of New York will hold its annual meeting at the Oak Hill Country Club, Rochester, September 22. Dr. William N. MacArtney, Fort Covington, author of "Fifty Years a Country Doctor," will make the principal address, and the film "Birth of a Baby" will be shown. The afternoon session will be made up of panel discussions with the following subjects and leaders: Drs. James H. Sterner, Rochester, "Rational Drug Therapy"; Abraham H. Aaron, Buffalo, "Gastrointestinal Problems"; Albert D. Kaiser, Rochester, "Problems in Children," and David B. Jewett, Rochester, "Pneumococcic Infections."

### New York City

**Health Safeguards at World's Fair.**—Plans for health and medical care at the New York World's Fair include ten first aid stations, a corps of physicians and surgeons, about 100 nurses, ten ambulances and a mobile x-ray unit, according to an announcement.

**Personal.**—Thomas J. Duffield, registrar, bureau of records, New York City Department of Health, has been appointed a delegate to the International Commission for the Decennial Revision of the International Nomenclature of Diseases, which opens in Paris October 3.

**Attempt to Curb Boat Whistles.**—The Maritime Association of the Port of New York recently adopted a resolution authorizing its committee on rivers, harbors and piers to communicate with owners and operators of craft in the harbor to eliminate unnecessary whistling on their vessels and excessive noise along the waterfront.

**University News.**—The Crocker Institute for Cancer Research of Columbia University has moved from its building at One Hundred and Sixteenth Street and Amsterdam Avenue to new quarters on two floors of the school of medicine at the Columbia-Presbyterian Medical Center, One Hundred and Sixty-Eighth Street and Fort Washington Avenue. The institute had been in the old building since its founding in 1913.

**Symposium on Ulcerative Colitis.**—The department of medicine, New York Post-Graduate Medical School, announces a symposium on chronic ulcerative colitis to be held September 23 at the Erdmann Auditorium. Dr. Philip Manson-Bahr, London School of Hygiene and Tropical Medicine, will be the guest of honor and will speak on "Differential Diagnosis of Ulcerative Colitis and the Dysenteries." Other guests on the program will be Drs. Moses Paulson, Baltimore, speaking on "Diagnostic Methods in Ulcerative Colitis," and Richard B. Cattell, Boston, on "Surgical Treatment of Ulcerative Colitis." Dr. Jacob Arnold Bargen, Rochester, Minn., will conduct a clinic.

### NORTH CAROLINA

**Changes in Health Officers.**—Dr. Clarence H. White, Burnsville, district health officer for Avery, Watauga, Yancey and Mitchell counties, has been appointed health officer of a new unit in Catawba County, it is reported. Dr. Robert R. King, Boone, has been appointed district health officer in a new district made up of Ashe, Alleghany and Watauga counties.

**Society News.**—Dr. Claiborne T. Smith, Rocky Mount, addressed the Edgecombe-Nash Counties Medical Society August 10 in Tarboro on "Bromide Intoxication."—Drs. Richard B. Dunn and Opie Norris Smith, both of Greensboro, addressed the Guilford County Medical Society August 4 on "Modern Methods of Resuscitation of the Newborn" and "Bromide Poisoning" respectively.—Dr. Thomas T. Stixrud, formerly of North Carolina and a missionary to the Belgian Congo for many years, addressed the Buncombe County Medical Society, Asheville, August 17, on sleeping sickness.

### OHIO

**Regional Graduate Lectures.**—The second series of graduate lectures in a five year educational program sponsored by the Ohio State Medical Association opened September 7 in Mansfield and Dayton and September 8 in Zanesville. Sessions in region E will be alternated between Dayton and Springfield. There will be eight sessions with two lectures each in each group, the series ending early in December. Subjects to be covered in all sessions are the clinical aspects of arteriosclerosis, treatment of early syphilis, pneumonia, diabetes, intestinal obstruction, common lesions of the cervix, prophylaxis and treatment of common contagious diseases, tuberculosis in infancy, common psychoses, cancer of the breast, antepartum and postpartum care, infections of the urinary tract, angina pectoris and coronary thrombosis, fungus infections of the skin and arthritis.

### OKLAHOMA

**Society News.**—The Pittsburg County Medical Society was addressed June 17 by Drs. Frederic G. Dorwart and Edward Halsell Fite, Muskogee, on statistical studies of diuretics and urology in children respectively.

**Graduate Study in Obstetrics.**—The Oklahoma State Medical Association is sponsoring a two year plan for graduate teaching in obstetrics in cooperation with the Commonwealth Fund of New York and the state department of health. The state has been divided into twelve teaching circuits, five cities to a circuit. The course will consist of a lecture each week for ten weeks in each town. Dr. Edward N. Smith, Oklahoma City, will be the lecturer.

## OREGON

**State Medical Election.**—Dr. Charles E. Hunt, Eugene, was chosen president-elect of the Oregon State Medical Society at the annual session at Mount Hood Timberline Lodge August 24-27 and Dr. Charles E. Sears, Portland, became president. Vice presidents elected were Drs. Louis P. Gambee, Portland; Frank L. Ralston, La Grande, and George E. Henton, Portland. Dr. Morris L. Bridgeman, Portland, was reelected secretary.

**Vender of Medicinal Tea Enjoined.**—Mary Rockwell of Portland, operating under the trade name of the Rhein Gold Tea Company, was enjoined from engaging in the illegal practice of medicine in an action recently instituted by the state board of medical examiners in the circuit court of Oregon, fourth judicial district, department 2. While the defendant claimed that she merely sold a food product in the form of a tea brewed from certain herbs possessing health-giving properties, the evidence indicated that she diagnosed ailments of persons from a study of what the court referred to as "urine analysis charts" and prescribed one or more of the fifteen teas she sold. She attempted to treat mastoiditis, tumors, diabetes, epileptic fits, constipation, kidney disease, headaches and gynecologic disorders by prescribing drugs said by the court to be largely cathartic. The defendant employed no physicians at the time this action was instituted but on prior occasions she had employed one or two for a few weeks. These physicians, however, severed their connection with the defendant's business. While the court thought it immaterial whether or not the defendant benefited any person for whom she prescribed, it was difficult for the court to conclude from the evidence that the "urine analysis charts" showed physical deficiencies that could be corrected by products sold by the defendant. This case, according to the attorney for the Oregon State Board of Medical Examiners, is the first instituted by the board under an amendment to the medical practice act adopted in 1937 specifically authorizing the board to institute proceedings to enjoin the illegal practice of medicine.

## PENNSYLVANIA

**State Medical Meeting at Scranton.**—The eighty-eighth annual session of the Medical Society of the State of Pennsylvania will be held in Scranton October 3-6, under the presidency of Dr. Frederick J. Bishop, Scranton. Guest speakers who will address general and section meetings include:

- Dr. Frank E. Adair, New York, Cancer.
- Dr. Robert L. Levy, New York, Therapeutic Aspects of Cardiac Pain.
- Dr. Maxwell Finland, Boston, Control of Pneumonia.
- Dr. Julius L. Wilson, West Haven, Conn., Pathology, Symptoms and Diagnosis of Pulmonary Tuberculosis.
- Dr. Henry A. Christian, Boston, Certain Clinical Aspects of Chronic Bright's Disease.
- Dr. Shields Warren, Boston, A Consideration of the Recent Important Discoveries Concerning the Etiology, Pathologic Physiology and Pathology of Diabetes.
- Dr. Perrin H. Long and Eleanor A. Bliss, Sc.D., Baltimore, Further Observations upon the Use of Sulfanilamide and Its Derivatives in the Treatment of Infectious Diseases.
- Dr. Abraham H. Aaron, Buffalo, Medical Measures of Value in the Treatment of Gastrointestinal Diseases.
- Dr. Richard H. Overholt, Brookline, Mass., Recent Advances in the Treatment of Pulmonary Tuberculosis.
- Dr. Harvey B. Stone, Baltimore, Surgery of the Colon.
- Dr. Samuel J. Kopetzky, New York, Management and Treatment of Otogenic Meningitis.
- Dr. Cecil S. O'Brien, Iowa City, The Extraction of Senile Cataract.
- Dr. Josephine B. Neal, New York, Treatment of Meningitis.
- Emerson R. Sausser, D.D.S., Philadelphia, The Problem of Dental Diseases Affecting the Child.
- Dr. Charles F. McKhann, Boston, Tissue Extracts and Blood Coagulation.
- Dr. Frank J. Eichenlaub, Washington, D. C., Transfusion Syphilis.
- Dr. Philip W. Brown, Rochester, Minn., The Mutual Interchange of Intestinal and Urinary Signs.
- Dr. Benjamin P. Watson, New York, Present Attainment and Future Hope—An Obstetrical Review.

Round table conferences have been arranged on cancer, cardiovascular diseases, pneumonia, tuberculosis, nephritis and diabetes, in which several of the guests will participate. The section on pediatrics will have a panel discussion of endocrinology in childhood and the section on urology a symposium on chemotherapy.

## Philadelphia

**Society News.**—At the first fall meeting of the Philadelphia County Medical Society, September 21, Dr. Chauncey L. Palmer, Pittsburgh, chairman of the committee on public health legislation, Medical Society of the State of Pennsyl-

vania, will make an address entitled "Whither Medicine?"—A symposium on biliary disease was presented at a meeting of the North End Medical Society and the North Branch of the Philadelphia County Medical Society September 15 by Drs. William A. Swalm, Isidor S. Ravidin and Henry L. Boekus.

## Pittsburgh

**Research on Stream Pollution.**—The American Iron and Steel Institute has recently founded a fellowship at Mellon Institute of Industrial Research to study the problem of preventing stream pollution by waste liquors from such operations as "pickling," in which metals are treated with acids. The object of the research will be to treat or process the waste material so as to render it safe for discharge into streams and to recover from it chemicals that can be used again. Willard W. Hodge, M.A., professor of chemical engineering, University of West Virginia, Morgantown, is on leave of absence for a year to head the investigation at Mellon Institute.

## TENNESSEE

**Society News.**—Dr. Paul H. Ringer, Asheville, N. C., addressed the Greene County Medical Society, Greenville, July 12, on "Early Diagnosis and Treatment of Tuberculosis" and Dr. Jesse B. Naive, Knoxville, "The Part Played by Institutional Care in a Tuberculosis Control Program."—Drs. Harold J. Starr and John W. Hocker, Chattanooga, addressed the Chattanooga and Hamilton County Medical Society August 4 on "Diarrhea in Children" and "Diagnosis and Treatment of the More Common Skin Conditions in Children" respectively.—Among speakers at a meeting of the Memphis and Shelby County Medical Society July 5 were Drs. Nicholas Gotten on the use of mandelic acid in epilepsy and Charles G. Andrews, cancer of the breast; both are of Memphis.

## TEXAS

**Committee on Industrial Health Appointed.**—Dr. Charles M. Aves, Houston, has been appointed chairman of a new committee on industrial health of the Texas State Medical Association. Members of the committee are Drs. William P. Lowry, Wichita Falls; Ross B. Trigg, Fort Worth; George Sladezyk, Port Arthur, and Harry A. Haverlah, Palestine.

**Hospital News.**—Plans have been announced for a forty-bed isolation hospital in connection with the El Paso City-County Hospital, to be built at a cost of about \$50,000 financed in part with PWA funds. The building will be in modified Spanish style of one story. There will be a special department for patients with poliomyelitis.—The Methodist Hospital, Fort Worth, is to be renamed the Harris Memorial Hospital in memory of the late William H. Harris, father of the medical superintendent, Dr. Charles H. Harris. The hospital has received as an endowment the Harris Clinic and Hospital, valued at \$200,000, notes totaling \$153,000 held against the hospital by Dr. Harris, and a share in the Harris estate at his death estimated at from \$250,000 to \$500,000, according to *Hospitals*.—Drs. I. Sellers Moore, formerly of Ozona, and Lee Alton Absher, formerly of Portland, Tenn., have opened a \$30,000 hospital at Midland. It contains five rooms for patients, an operating room and various treatment rooms, with x-ray and ultraviolet ray equipment.

## VIRGINIA

**Society News.**—Dr. W. Ambrose McGee, Richmond, was the guest speaker before the Fourth District Medical Society in South Hill August 16; his subject was "Prophylaxis and Early Recognition of Allergic Diseases of Childhood." Other speakers were Drs. Ruth S. Mason-Grigg, Petersburg, on "Treatment of Diabetes"; Philip Jacobson, Petersburg, "Complications of Diabetes," and William R. Jordan, Richmond, "General Care of Diabetes."—Dr. John M. Meredith, Charlottesville, addressed the Augusta County Medical Society, Waynesboro, August 3, on "Head Injuries."

**Personal.**—Dr. Meade Stith Brent of the staff of the Central State Hospital, Petersburg, has been appointed superintendent to succeed Dr. Hugh C. Henry. Dr. Henry was recently appointed state hospital director.—Dr. James Nicholas Dudley, formerly of Eastville, has been appointed health officer for the Farmville district, made up of Prince Edward, Buckingham and Nottoway counties.—Dr. Benjamin Roscoe Gary, Newport News, was presented with a silver service recently as a mark of appreciation from his patients.

Dr. Gary has practiced forty-seven years in Newport News. He graduated from the University of Maryland School of Medicine, Baltimore, in 1891.

## WEST VIRGINIA

**Personal.**—Dr. Edwin Cameron, Baltimore, has been appointed health officer of Monongalia County.—Dr. Robert L. Hunter, Whitesville, health officer of Boone County, has been placed in charge of a new Coal River District that includes Boone and Lincoln counties.

## PUERTO RICO

**Personal.**—Dr. Eduardo Garrido Morales has been reappointed by Governor Winship commissioner of health of Puerto Rico for a term of four years.

## GENERAL

**Changes in Status of Licensure.**—The New Jersey Board of Medical Examiners recently reported the following actions:

Dr. Ernest Casini, Garfield, license revoked April 20.  
Dr. Joseph F. Iuliani, Newark, license restored June 15.

The New York State Board of Medical Examiners reported the following action:

Dr. Sigmar K. Reinhold Hilfer, whose last known address was 5 Riverside Drive, New York, license revoked May 20, on the charge of fraud and deceit in the practice of medicine.

The Oklahoma State Board of Medical Examiners recently reported the following action:

Dr. Mark White, Chicago, license issued by reciprocity from Iowa revoked June 9 for unprofessional conduct.

**Mississippi Valley Tuberculosis Meeting.**—The silver anniversary meeting of the Mississippi Valley Tuberculosis Conference and the Mississippi Valley Sanatorium Association will be held in St. Louis September 21-24 under the presidency of Dr. Edward A. Meyerding, St. Paul, for the conference and of Dr. Vera V. Norton, Cincinnati, for the association. Among speakers at various sessions will be:

Dr. Herman E. Hilleboe, St. Paul, Analysis of Results of Modern Methods of Treatment in Sanatoriums.  
Dr. Cameron St. Clair Guild, New York, The Problem and a Program for Combating Tuberculosis Among Negroes.  
Dr. Paul A. Teschner, assistant director, Bureau of Health Education, American Medical Association, Chicago, Interpreting Tuberculosis to Ready-Made Audiences.  
Dr. Jay Arthur Myers, Minneapolis, Modern Concepts of Tuberculosis (in a symposium).  
Dr. Evaris A. Graham, St. Louis, Extrapleural Pneumothorax.

**Death Rates in Large Cities in 1937.**—The New York City Department of Health has issued its annual tabulation of death rates in twenty-seven large cities of the United States, prepared from information furnished by the health officers of the cities. Detroit had the lowest rate of any of the cities listed, 8.6 per thousand of population, and Denver the highest, 15.9. For the five largest cities the rates were: New York 10.4, Chicago 10.3, Philadelphia 12.4, Detroit 8.6, and Los Angeles 12.8. The average rate for the twenty-seven cities, which have an estimated population of 27,000,000, was 11.6. Rochester, N. Y., showed the lowest infant mortality rate, 32 per thousand births. San Francisco was second with 32.6 and Jersey City, N. J., had a rate of 32.9. New Orleans had the highest rate, 78.3. The average birth rate was 15.3. The highest birth rate occurred in Jersey City, 20.7, and Denver was second with 20.1. The lowest was in San Francisco, 11.9.

**Pharmacists Urge Freedom of Choice in Medical Care.**—The American Pharmaceutical Association at its recent annual meeting in Minneapolis adopted a resolution pledging its cooperation in devising suitable plans for the utilization of the present existing agencies that provide medical services. The resolution emphasized especially that the association urges the retention of free choice of physician, dentist, pharmacist and nurse by the patient as an essential feature in whatever system may be adopted. At the Minneapolis meeting the association's committee on study of pharmacy was renamed the "committee on social and economic relations" in view of the fact that its duties have been enlarged to include consideration of employer-employee relations, governmental participation in supplying necessary health services and other matters involving the relation of pharmacy to the social and economic structure.

**Center for Training in Safety Education.**—The National Conservation Bureau of the Association of Casualty and Surety Executives in cooperation with New York University has set up at the university a national center for the training of

teachers and supervisors in the field of safety. Ned H. Dearborn, dean of the division of general education at the university, is chairman of an advisory committee and Albert W. Whitney, consulting director of the National Conservation Bureau, is vice chairman. Herbert J. Stack is director of the new center. Activities of the center will be in four main divisions: graduate courses in safety education for city and state supervisors, research on preparation of books and manuals for carrying on safety activities, field and consultant work, and the publication and distribution of courses of study, books, visual aids and other educational publications. Twenty-eight fellowships and scholarships are to be awarded this year for courses, many of them leading to an advanced degree. Several of the courses will be given in other centers near New York.

**Symposium on Mental Health.**—The American Association for the Advancement of Science announces that a symposium on mental health will be presented at the midwinter meeting in Richmond, Va., December 28-30, under the chairmanship of Dr. Walter L. Treadway, assistant surgeon general, U. S. Public Health Service. Six sectional sessions will be held over the three days and a general discussion session will conclude the symposium Friday evening December 30. Chairmen for the sessions have been named as follows: Drs. Clarence M. Hincks, New York, mental health administration; Nolan D. C. Lewis, New York, research into mental illness; Franklin G. Ebaugh, Denver, professional education; Abraham Myerson, Boston, community sources of mental disorders—their amelioration and prevention; Harry Stack Sullivan, New York, physical and cultural environment in relation to the conservation of mental health, and Joseph Zubin, Ph.D., U. S. Public Health Service, economic aspects of mental disease. Papers will not be read at these sessions but will be published before the meeting and used as a basis for discussion. The program committee is made up of the session chairmen and the following additional members: Drs. Samuel W. Hamilton and Grover A. Kempf, New York; Roscoe W. Hall, Washington, D. C.; James S. Plant, Newark, N. J.; Malcolm H. Soule, LL.D., Ann Arbor, Mich., and Paul O. Komora, associate secretary, National Committee for Mental Hygiene. Communications should be addressed to Symposium on Mental Hygiene, American Association for the Advancement of Science, Room 822, 50 West Fiftieth Street, New York.

**American Hospital Association.**—The fortieth annual convention of the American Hospital Association will be held in Dallas, Texas, September 26-30, under the presidency of Robert E. Neff, Iowa City. Among speakers who will address general and section meetings will be:

Dr. John H. Musser, New Orleans, Significant Nutritional Developments to Be Considered in Institutional Food Service.  
Edward H. Lewinski-Corwin, Ph.D., New York, The Hospital of the Future.  
Arthur J. Altmeyer, chairman, Social Security Board, Washington, D. C., The Relation of Hospital Service to a National Health Program.  
Dr. Harry E. Kleinschmidt, New York, The Role of the General Hospital in the Control of Tuberculosis.  
Dr. Hugh Leslie Moore, Dallas, Control of Infection in a Children's Hospital.

Other features will be a panel discussion on hospital care insurance, clinical demonstrations on emergency room technic and orthopedic work, and various round table discussions. Meeting in conjunction with the association will be the American Protestant Hospital Association September 23-25, the National Association of Nurse Anesthetists September 26-30 and the American College of Hospital Administrators September 25-26.

## CANADA

**New Dean Appointed at Montreal.**—Dr. Joseph Allert LeSage, professor of clinical medicine, University of Montreal Faculty of Medicine, Montreal, Que., has been appointed dean of the medical faculty to succeed Dr. Tésphore Parizeau, who has retired. Dr. Georges H. Baril, professor of physiologic chemistry, has been made director of studies.

## LATIN AMERICA

**Meeting of Orthopedic Surgeons.**—The third congress of the Brazilian Society of Orthopedics and Traumatology was held in Recife, Pernambuco, Brazil, July 1-3, under the presidency of Dr. Luiz Barros, Lima, professor of orthopedic surgery, Faculty of Medicine of Recife. The principal subjects for discussion were "Fractures of the Ankle" and "Sequelae



of Infantile Paralysis." The next congress will be held in São Paulo in July 1940 and the subjects to be discussed are "Fractures of the Spine" and "Lumbar Pains."

## FOREIGN

**Society News.**—The International Spa Federation will hold a meeting in Berlin September 22-23 and the International Spa Congress will be held at Bad Nauheim September 24-27 in conjunction with the second German Balneological Conference. Arrangements are being made by the Reichsfremdenverkehrsverband, Berlin W. 9, Potsdamer Platz 1. —The Italian Society of Obstetrics and Gynecology will hold its thirty-fifth congress at Perugia October 16-18, instead of Pisa September 20, as previously planned. Subjects announced for discussion are chorionepithelioma, female sterility, painless labor and insurance on maternity.

## Government Services

### Training Course for Fifth Corps Area Reserves

A medicodental military inactive status training course will be held at Cleveland October 3-15 with the cooperation of eight Cleveland hospitals, Western Reserve University and the Cleveland Academy of Medicine. A professional program will be presented for medical and dental officers separately in the mornings and a military program for all officers attending in the afternoons and certain evenings. One hundred hours of inactive status training credits will be granted to all reserve officers completing the course. Inquiries should be addressed to: Headquarters, Organized Reserves, 538 Federal Building, Cleveland.

### Changes in the Food and Drug Administration

Dr. James J. Durrett, chief of the drug division of the Food and Drug Administration, U. S. Department of Agriculture, has been made principal technical adviser attached to the office of the chief of the administration, according to an announcement of changes in personnel made necessary by the enactment of the new federal food, drug and cosmetic law. Dr. Durrett will share with other officers the responsibility of determining administrative questions in the application of the new law and will give special consideration to the adequacy of information submitted by manufacturers with their applications on new drugs filed in compliance with the provisions of the act. Dr. Theodore G. Klumpp, now senior medical officer of the drug division, succeeds Dr. Durrett as chief of that division. Dr. Klumpp graduated from Harvard University Medical School, Boston, in 1928.

### Physicians Needed for CCC Duty

The surgeon of the Eighth Corps Area, U. S. Army, announces that physicians are needed for duty in the Civilian Conservation Corps. Applicants must be graduates of class A medical schools and preference will be given to medical reserve officers of the grades of first lieutenant or captain. The monthly pay status is as follows:

1. Captains, medical corps reserve, with dependents, having over seven and less than seventeen years' service, \$336.
2. Captains, medical corps reserve, without dependents, having over seven and less than seventeen years' service, \$298.
3. Married first lieutenants, medical corps reserve, \$262.67, including allowances.
4. Unmarried first lieutenants, medical corps reserve, \$224.67.
5. Civilian physicians placed on duty as contract physicians, \$200 if single; \$265 if married.

Assignment preference of applicants will be granted when practicable within the five states comprising the eighth corps area: Arizona, Colorado, New Mexico, Oklahoma, Texas and Wyoming. Inquiries should be addressed to the Surgeon, Headquarters, Eighth Corps Area, Fort Sam Houston, Texas.

## CORRECTION

**Anatomic Factors in Pathogenesis and Treatment of Urethrocele and Cystocele.**—In a paper by this title by Curtis, Anson and McVay, in *THE JOURNAL*, September 3, the words "which ensheath" should have been inserted in the fourth line of the summary following the words "the endopelvic fascia" on p. 905.

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Aug. 27, 1938.

### Closer Contact Between British and American Scientists

A new division has been formed in the British Association which will deal with the social and international relations of science. The association has made much closer contact with the American Association for the Advancement of Science. The number of American visitors this year was a record—more than eighty. The association has been anxious for closer contact, and it will be achieved by lectureships. In one year an eminent American lecturer will come to the British Association and discuss some topic of broad scientific and possibly of social interest, and in the following year a British lecturer will visit America on a similar mission. It has also been felt that the two associations should be closely cognizant of each other's activities. To that end the British Association will elect to honorary membership members of the council and officers of the American association, and the American association will pay a similar compliment.

### Marriage After Recovery from Lethargic Encephalitis

An inquest on a woman aged 25, who died in an epileptic fit, has for the first time in this country given practical proof of the danger of marriage to a woman who has suffered from lethargic encephalitis. She suffered from that disease at the age of 11 years but was stated to have made a remarkable recovery under institutional treatment. Her mother alleged that a physician had said that she would be better if married. She married three years ago, but since the birth of a child last September she had been very ill. The physician who had attended her for several years denied that he ever suggested that she would be better married. "No sane medical man would advise marriage in a case like this," he added. Dr. J. M. Webster, director of the West Midland Laboratory of Forensic Science, gave evidence that there was a tendency for patients who had suffered from lethargic encephalitis to get worse after marriage.

### Research in Food Storage

Experiments which may revolutionize methods of preserving and storing food are being carried out at the Low Temperature Research Station, Cambridge. Scientists working there for the Department of Scientific and Industrial Research are using radium x-rays and ultraviolet rays in search for the ideal sterilizing agent for meat. It is hoped to evolve a method better than the present cold storage. It is thought that meat might be sterilized by radiation without affecting its quality or appearance. But sufficient is not yet known about the action of radiation on biologic material. A new remarkable line of research—biologic control—is being developed. By means of it certain bacteria would be deliberately allowed to grow, while others would be killed or inhibited. It would thus be possible to alter the flavor of meat at will, just as the cultivation of certain bacteria in cheese creates special flavors of the various types.

### The Future of Biochemistry

At the meeting of the British Association a symposium was held in the Chemistry Section under the chairmanship of Sir Frederick Gowland Hopkins, the pioneer of biochemistry in this country. He is 77, a Nobel prize winner and a past president of the Royal Society and the British Association. He has held the chair of biochemistry at Cambridge since 1914.

and announced his approaching retirement. In his address he welcomed the government's decision, on the advice of the Medical Research Council, to endow chemotherapeutic studies in this country on a satisfactory scale. It was just fifty years since he "became a would-be biochemist," and he had followed with deep interest the gradual approach of modern organic chemistry to modern biology and medicine. That approach had been slow, but it had accelerated in recent years. He believed that the advent of so many eminent and enlightened organic chemists in the field of biochemistry was of the happiest augury both for the biologic sciences and for medicine. "As I retire from this field I foresee a possibility which gives me some concern. It is inevitable that the thought of the physiologist will come to deal more and more with the chemical aspects of his science. He and the chemist, organic and physical, are moving toward each other. Does this mean that biochemistry, with the special claims it is making today, will disappear? Will the biochemist be squeezed out of existence between the upper and nether millstones? I hope not. It is my faith that the studies of the dynamics of living tissues now emerging from an embryonic stage are fated to develop a technic which must always be specialized and which will become complete. Its application will call for special training, and it will be the main concern of the future biochemist. He will always be needed as a link between the pure chemist, organic and physical, and the needs of biology and medicine."

#### The Protection of London Against Air Raids

Though elaborate precautions are being taken against gas attacks on this country, little has so far been done in providing shelters against explosive bombs. In the case of London the difficulty and expense of providing adequate shelter for the population are enormous. A comprehensive scheme, drawn up by the Science Commission of the International Peace Campaign, has been submitted to the government. The commission includes Proi. J. B. S. Haldane, Prof. J. R. Marrack (chemical pathology), Professor Bernal (physics) and leading architects, surveyors and engineers. As the most realistic way of showing how protection could be achieved, an area of London, the borough of St. Pancras, with a population of 136,287, was selected. The report states that the civil population has now become a definite military objective and is not simply the unfortunate recipient of misdirected bombs intended for military targets. It is pointed out that future air raids will be of a far different character from those of the great war, when the total casualties in England were 1,414 killed and 3,416 wounded by about 270 tons of bombs. It is now possible to unload that quantity in about three raids.

The commission recommends the evacuation of children and some of the mothers and the provision of shelters for every one else in such a manner that no one should be more than two or three minutes from the entrance to a shelter. It is proposed that all children up to 14, the mothers of those up to 5, all people over 70, and the sick and infirm be evacuated for the duration of the war to places less liable to attack. To carry this out in St. Pancras would mean leaving 136,287 out of the population of 183,900. It is recommended that a definite area in the country be allocated to each borough. The children up to 3, their mothers and the old people would probably be billeted in existing houses in the country without too much overcrowding. But it would be necessary to provide new accommodation for the school children and those looking after them. Colonies of holiday camp type with educational, sanitary and other facilities should be constructed, each to contain not more than 500 and to be a considerable distance from the next camp, so that no new targets worthy of attack would be created. To provide additional safety the camps should be camouflaged and trench systems constructed in the surrounding country.

Regarding the shelter system, the commission believes a system of tunnels would provide the main solution in St. Pancras. The London clay presents a relatively simple problem for the tunnel engineer. Parts of the present tube railway, lying at a depth of 60 feet or more, can be easily adapted for the purpose of shelter, but the running of trains should not be seriously interfered with and therefore only passages and platforms should be used. The proposed shelters are to be tunnels in the London clay, 50 feet below the surface, of inverted U section and lined with steel. They are to be 6 feet 6 inches wide and 7 feet 6 inches high, with a row of seats along each side and a gangway in the middle. Electric light, air filtration plant, gas locks, hot and cold water, decontamination and dressing rooms, chemical closets and facilities for dealing with minor casualties are to be provided. Access is to be by stairways, staggered to prevent the entrance of missiles.

#### PARIS

(From Our Regular Correspondent)

Aug. 18, 1938.

#### The Experimental Aspect of the Paravitaminoses

A paper based on experimental research was read by Dr. Georges Mouriquand at the June 14 meeting of the Académie de médecine of Paris. He stated that the study of avitaminoses, whether outspoken or latent in their clinical manifestations, had led to his study of the paravitaminoses during the past twenty-five years. This term is employed in the sense in which Fournier used that of parasyphilis for such diseases as tabes and dementia paralytica, which, although of syphilitic origin, failed to show specific tissue changes regarded as typical for this type of infection. The specific lesions of syphilis are amenable to treatment but this is not true of those of the parasyphilitic conditions. The evolution of the definitely recognized vitamin-deficiency conditions, i. e., of the various avitaminoses, is the same as that from syphilis to parasyphilis. An avitaminosis after having given rise to lesions which can be considered specific for the particular type of avitaminosis is amenable to treatment with the vitamin that is lacking, but this apparent recovery is followed by lesions which are more or less resistant even though the administration of the particular vitamin is continued. One now enters the domain of aspecific lesions to which the term paravitaminosis can be applied. Thus one can speak of a paravitaminosis A, B or D but the author limited his paper to the discussion of acute and chronic paravitaminosis C. An acute avitaminosis C passes through a eutrophic and a dystrophic stage. During the course of the former the typical lesions of scorbutus without general dystrophy are observed. In this stage the use of ascorbic acid during a period of a few days is followed by healing of the lesions and reestablishment of the normal equilibrium of nutrition. From twenty to twenty-four days later, sometimes sooner, a persistent diarrhea appears accompanied by anorexia and a loss of weight. This is the second or dystrophic stage. Even at this period the diarrhea can be checked by ascorbic acid, but, although the appetite returns, the signs of defective nutrition increase from day to day. The animal, although showing marked evidence of inanition, continues to eat but assimilation has come to a standstill. No matter how much ascorbic acid is given, the inanition persists, i. e., a new form of dystrophy has supervened and one can speak of an acute paravitaminosis of the athreptic type.

The author's study of chronic avitaminosis C has been of special interest in clearing up the question of paravitaminosis C.

It is not difficult to produce a chronic scorbutus in guinea pigs. Toward the thirty-fifth to fortieth day, lesions appear which are characterized by edemas and hemorrhages, which at times assume huge proportions but which respond promptly to the action of ascorbic acid. If, however, no such treatment is given, the lesions tend to regress and even disappear; but

as sequels a marked muscular retraction with pseudo-ankylosis, especially of the hind legs of the animal, appar. Radiography toward the seventieth or eightieth day reveals progressive osseous changes in the form of decalcification of the epiphyses and a marked periostitis. At this time there is a transition from the stage of avitaminosis to that of a paravitaminosis, in which the administration of ascorbic acid has no influence on the osseous lesions, which are now in the aspecific stage. If one has not had occasion to follow the bone and muscular changes from the onset, their relation to an avitaminosis may escape detection.

Dr. Mouriquand stated that no clinical observations had as yet been made as to such paravitaminoses.

### Reopening of the Palace of Discovery

One of the most interesting and popular features of last year's Paris Exposition was the scientific exhibit arranged under the supervision of Dr. Pasteur Vallery-Radot, a grandson of Louis Pasteur. This exhibit was reopened to the public July 11 by Mr. Zay, minister of public education. The object of the exhibit in the Palace of Discovery is to familiarize the public with the advances that have been made in all branches of science during the last 150 years. Close to the entrance is an enormous apparatus for generating static electricity constructed by Professor Joliot, son-in-law of the late Mme. Curie. The discoveries of the latter and of Langevin on the piezo-electric vibrations of quartz and on ultra sounds have been utilized in a minute organ capable of giving forth a range of combinations of sounds beyond the imagination of an ordinary individual. A planetarium showing the mechanism of eclipses is an instructive feature. The television exhibit includes all the latest discoveries in this field. The same is true of that of the physics display, including demonstrations of atomic and molecular composition of matter. The medical and surgical sections include a series of charts, amplified by charts and by photographs of bacteriologists of all countries who have become famous as the result of their contributions to this field. In the surgical section the different methods of blood transfusions are illustrated with the aid of wax figures of donors and recipients, showing how the different types of apparatus are employed. The anesthesia section gives the lay public an idea of the progress made during recent years in this special field. Modern medicine can look with pride on the contributions which it has made to the prolongation of life as reflected in its exhibits in the Palace of Discovery.

### Plaque in Honor of Professor Brown-Séquard Dedicated at Nice

During the recent Congrès des sociétés savantes, a plaque in commemoration of the work of the late Professor Brown-Séquard was placed in the lobby of the Centre Universitaire at Nice. Before Brown-Séquard's election as professor of experimental and comparative pathology in the University of Paris, he had been professor of pathology of the nervous system at Harvard University and subsequently a member of the attending staff of the Paralyzed and Epileptic Hospital in London. He is perhaps best known for the paper published in France in 1850 on decussation of the sensory fibers in the spinal cord to explain the syndrome to which the term Brown-Séquard type of hemiplegia has since then been constantly applied. His studies on the function of the sympathetic nervous system were published in Philadelphia in 1852, and his contributions concerning the part played by the endocrine glands in physiology and clinical medicine laid the foundation for present day endocrinology.

### Birth Rate Continues to Decline

According to the most recent statistics, 274,122 marriages took place in France in 1937, as compared to 350,000 in 1930. There has been a similar decrease in the number of births since

1930. In that year there were 749,953 births; two years later the number rose to 772,246, but in 1937 it dropped to 616,863. In 1930 there were 100,000 more births than deaths, while in 1937 the number of births exceeded the number of deaths by only 12,000.

### Dr. Clovis Vincent Appointed Professor of Neurosurgery

As stated in a previous letter, a department of neurosurgery has been organized at the Faculté de médecine (medical school of the University of Paris). Dr. Clovis Vincent was appointed head of this department August 1 and will begin his courses at the opening of the fall session of the school.

### BERLIN

(From Our Regular Correspondent)

Aug. 8, 1938.

### The Exclusion of Jewish Physicians

On August 3 a new, fourth amendment to the Nuremberg racial laws was made public. The effect of its enforcement will be to exclude Jewish physicians from the medical profession. On September 30 the licenses (approbationen) of all Jewish physicians become null. From this date a Jewish doctor will not be permitted to attend a patient of German blood. Nor will any whose license is revoked by this ordinance be permitted to practice as a so-called *heilpraktiker* (a term which in the last analysis signifies "quack"); as the official text reads, he cannot thus "attempt to circumvent the law."

Dr. Grote, director of the association of panel practitioners, has contributed to the *Voelkischer Beobachter* an interesting statistical report on Jewish practitioners in Germany. At the time of the Nazi accession to power in 1933 there were within the reich a total of 6,480 Jewish physicians; included in this number were Jewish hybrids and doctors of Jewish affinity. There were then about 50,000 physicians in Germany, of which number the group classified as Jewish comprised some 13 per cent. In June 1937 there were still 4,220 Jewish physicians in the reich, 3,748 of whom held valid licenses and were engaged in practice. At the time of the Nazi revolution the so-called "alienization" of the profession had been greatest in Berlin; from 70 to 80 per cent of all physicians in that city were Jews. Even after the first "purge" (the term is Dr. Grote's) more than one half of Berlin doctors were Jews, 3,423 Jews in a total 6,558 doctors. In July 1938 there were still 1,561 Jews among the 6,949 physicians of Berlin, the percentage of Jews having declined to 22.4. Among the 2,973 panel practitioners in Berlin in July there were still 816 (27.4 per cent) Jews. The example of Berlin demonstrates, according to Dr. Grote, that previous legislation has not resulted in definitive solution of the problem of the exclusion of Jews in the medical profession, so vitally important to the nation. After October 1, Jewish doctors will be granted special permission to practice but only in communities in which the Jewish population is highly concentrated, as in Berlin. The new law also will, in effect, strengthen the supreme authority of the national fuhrer of physicians over all medical affairs.

The mentioned exceptional permission to remain in practice which will be granted to certain Jewish doctors will not be tantamount to a restoration of the regular license. It will be rather of the nature of a temporary, readily revocable permit to practice medicine under certain specified conditions. A Jew who holds such a permit must, excepting in the case of his wife and legitimate children, restrict his practice to Jewish patients. Violations of this provision, whether intentional or inadvertent, are to be punishable by imprisonment for not more than one year, by fine or by both. Former front line combatants in the World War who are deprived of their licenses by the new law will be granted temporary compensation by the national chamber of physicians, on the basis of need and merit. Further clauses

concern the premature termination of service contracts, leases and so on, necessitated by the new legislation.

According to authoritative report, the organized medical profession will assist Jewish doctors to obtain reeducation in other fields. This movement will receive adequate financial support; further details with regard to it are not yet available.

On the basis of a far-reaching decision of the national bureau of insurance, Jewish hospitals are forbidden to treat non-Jewish sick insurance club patients. In explanation of this measure, it is stated that treatment of non-Jews in a Jewish-controlled hospital provides opportunities for just those contacts between German citizens and Jews which are to be avoided as much as possible.

#### Determination of Alcohol Content of the Blood

The national fuhrer of the schutzstaffel and the chief of German police have issued a decree with regard to forensic determination of the alcohol content of the blood. The new regulations are based on the aggregate of experience with this problem and will be uniform for the entire country. Only tests the efficacy of which has been proved by experts will be applied. The blood tests will be made in cases wherein establishment of intoxication has an important bearing on the criminal culpability of a suspected person. Likewise, other persons are submitted to the test if intoxication must be established, because it is the result of or clue to a criminal offense committed on one of these persons. Since obtaining the blood specimen can be legally done only by a physician and since the procedure is altogether harmless, it may be performed even without the consent of the person. In traffic accident cases the incontestable determination of the degree of intoxication of all participants, including the victims, is of the utmost importance. Accordingly, all participants in an accident, not only automobile drivers but pedestrians as well, may be submitted to the blood tests if circumstances so warrant. As a precautionary measure the blood test may be made of any person engaged in driving a vehicle or who contemplates driving a vehicle and whose fitness to drive is questioned because of suspected intoxication. Physical examination must be made without delay as soon as possible after the occurrence in question, in order to establish with maximal accuracy the degree of inebriety or sobriety, as the case may be. The blood specimen should be taken within one and one-half hours after ingestion of the alcohol. The foregoing provisions are enforced by all federal and local police authorities within the German reich.

#### Study of Progressive Muscular Dystrophy

The problem whether there is a uniform hereditary transmission of progressive muscular dystrophy was investigated by Drs. Kostakow and Bodarwé at the Medical Clinic of Bonn University. They arrived at the following conclusions after a study of the genealogies of six familial groups in which progressive muscular dystrophy had been present. The disorder is always based on heredity. Its pathogenesis is traceable to mutations within the sum of hereditary factors in the ascendancy. Its further heritability is not uniformly independent of the fact that in addition to the dominant genes there are also recessive genes which may lead to manifestation of the disease. The investigations assume the existence of at least two forms of dystrophy which differ genotypically and that these correspond to the infantile and juvenile types and are present in kindred. In two of the six mentioned groups a hereditary sex-linked transmission was determined and in the other four simple recessive transmissions. In one group a consanguineous marriage had occurred; the authors emphasize this circumstance as an important factor in the manifestation of muscular dystrophy through the recessive predisposition. The four groups in which simple recessive hereditary predisposition was determined all resided within a circumscribed rural

area. The group in which sex-linked transmission was established presented a predominance of the infantile type of progressive muscular dystrophy with pseudohypertrophy, whereas the simple recessive transmission groups presented both infantile and juvenile types. It was noted that, surprisingly enough, the cause of death in each case had been some disorder of the respiratory organs.

#### Measures for the Abolishment of Sterility in Women

The interested ministries, the panel practitioners' association and the sick insurance clubs have instituted concerted measures destined to reduce the incidence of sterility in women to the lowest possible minimum. In certain instances, sterility of married women may be considered a general illness even if the condition is not linked to significant lesions or lack of working capacity. This concept obtains if there is a possibility of abolishing the condition and if the fertility of the patient would best serve the public good. If these prerequisites are fulfilled, the insurance clubs handle the necessary arrangements. The confidential medical advisers of the clubs make the recommendations in each case. The expert opinion of these officers contains data with regard to the curability of the sterility, possible contraindication of surgical measures on the basis of health, and the condition of the husband with regard to procreation. Formerly, arrangements in such cases were under jurisdiction of the national minister of labor, but now the minister of the interior is also a participant. The last named official has decreed, as supplementary to previous legislation, that pertinent genealogic data should be acquired by the officers of the hygienic centers. The eugenic standards must be at least as exacting as those required of candidates for the state marriage subsidies. Free examinations of supposedly sterile women are made at the centers. Only women of German or related blood are eligible.

In the wake of all this ministerial regulation the panel practitioners' association of Germany has entered into agreements with a number of the insurance clubs relative to the mentioned examinations for sterility. The expert should decide in addition to the questions already mentioned the matter of the most promising and at the same time most economical procedures to be followed. Special medical services not usually envisaged in the contracts between the sick insurance clubs and the medical organization are paid for even if the examination is not followed by operative or other treatment. The clubs also assume the costs of the genealogic investigation. If all the prerequisites are satisfied, the cost of treatment is shouldered by the club in question.

#### Cancer and Occupation

The National Anticancer Commission undertook a questionnaire survey with regard to the occupation of 1,250 male cancer patients. A distinction was made between skilled workers and unskilled workers. Dr. Hellmut Haubold, cancer specialist of the National Health Bureau, reports the results in the *Reichs-Gesundheitsblatt*. Men of uncertain occupation were so listed and in the definitive classification this group was reckoned among the unskilled workers. But despite this precaution the survey showed that a vast majority, 75.8 per cent of the men, belonged to the skilled worker class. Of these 951 skilled workers the largest individual group (227 men) was that of the civil servants. In second place were 150 farmers, and in third place 139 workers in the metallurgic and related industries, including workers in the production of iron and steel and workers in wrought metals; next were 101 workers in the building trades. The largest class among the unskilled workers appertained to the iron, steel and other metal industries; second in rank were the unskilled farm laborers. The proportion of skilled workers, who comprised more than three fourths of the subjects, was explained as a logical result

of the membership in an occupational group and cancer incidence at a particular age level, since among the older group the proportion of skilled workers tends to exceed the proportion of the unskilled. Among the 1,250 men, only 110 skilled and seventy-one unskilled workers were over 70 years of age, namely but 14.4 per cent of the total. Moreover, it was found that the group most threatened by cancer lay between the ages of 40 and 65 (almost 60 per cent of the men were between these ages). This formidable incidence of cancer in middle age represents an important national menace, for cancer is by no means only a disease of old age. This is one more reason why the campaign against cancer should go forward intensely.

#### The Sphere of Application of Tomography

The question Under what conditions may tomography be substituted for the usual roentgenography? was recently discussed by Dr. H. J. Teschendorf before the Frankfort Medical Society. Experience to date has shown tomography (in Germany known as "roentgenschnittverfahren," roentgen-layer method) to be of indispensable value in the determination of tuberculous and bronchiectatic cavities and pulmonary abscesses. Tomographic examination of the lungs following thoracoplasty represents a particularly important application of the newer technique, since a sufficiently clear picture of the extent of the cavity and accordingly of the degree of success achieved by the intervention is but rarely provided by means of the ordinary roentgenogram. Tomography, however, can never completely supplant the usual roentgenography of the lung. The tomographic demonstration is superior to the older methods only in the fields of the sternum and the sternoclavicular joint. These parts cannot be accurately visualized by ordinary roentgenography. How widely tomography may be utilized as an aid in the detection of changes in the vertebral column and cranium, further investigation will disclose.

### POLAND

(From Our Regular Correspondent)

Aug. 14, 1938.

#### Resolution Concerning Aryans

Some members of the Association of Physicians of Poland who are adherents of racial theories managed at a meeting of the association in December 1937 to pass a resolution forbidding doctors of Jewish origin to the third generation to be members of the association. This paragraph was strongly opposed by the democratic physicians, who in many districts of Poland have formed the majority in the branch associations. The associations of those districts have broken with the board in Warsaw and consequently the association is now divided into two parties. Only the adherents of the racial theories have remained followers of the present board. The latter had to create new branches of the association in those districts of Poland in which a strong opposition on the part of the democratic physicians was encountered. This internal dissension has weakened the authority and activity of the association, which formerly cared for public health and defended the dignity of the medical profession.

#### Influence of Pancreatic Tumors on Urine from Right Kidney

Dr. Markert reported six cases of cancer in the cauda pancreatis in which a decrease of the secretory function of the left kidney was noticed. Thus the diuresis, the secretion of urea, chlorates and the dye introduced by intravenous injection were remarkably decreased. That phenomenon is probably caused by a reflex produced by excitation of the sympathetic nerves by the infiltrated retroperitoneal lymphatic glands or by the infiltrated capsule of the left kidney. This decrease of the secretion of the left kidney in case of tumor of the cauda pancreatis might suggest an erroneous diagnosis.

### The Congress of Polish Hygienists

The eleventh Congress of Polish Hygienists took place in Lublin July 29-30 on the fortieth anniversary of the Polish Hygienic Society. The meeting was devoted to health problems of villages. On account of the bad state of health in villages, the congress appealed to the government to increase the work of putting the hygiene of the village on a higher level, by supplying the country folk with medical aid. Poland is an agricultural country.

#### Study of Causes of Pericarditis

In the Institute of Pathologic Anatomy of the Cracow University, postmortem examinations concerning the causes of pericarditis have been made by Dr. Hassmann. The material consisted of 9,739 cases, among which inflammatory lesions or their residuums in the pericardium were found in 463. Statistical data on the etiology showed the following percentages: rheumatism 19.4, tuberculosis 18.7, septic suppurative 14.6, pneumonia 12.7, purulent pleuritis 9, tumors of the mediastinum 6, diseases of the kidneys 4.5 and myocardial infarct 2.

#### Research on Cardiac Arrhythmia

At the session of the medical department of the Polish Academy of Science, May 20, Dr. Hrom of the clinic of Warsaw University read a paper based on 1,300 cases of arrhythmia observed in the last nine years and in which 1,765 electrocardiographic records were made. These researches confirmed the knowledge that cardiac arrhythmia can be caused not only by cardiovascular disorders but by physical effort, tobacco or coffee, digitalis and diseases of other organs. It appeared that atrioventricular dissociation is more often caused by diffuse lesions of the myocardium than by circumscribed lesions. It has also been proved that auricular fibrillation often disappears through a transitory period of auricular flutter. To distinguish extrasystoles of functional origin from those caused by organic lesions of the myocardium, the author has noticed that in the latter case the effort test caused extrasystoles of a different electrocardiographic shape and in different directions, while in functional cases all the electrocardiographic records of the extrasystoles were of the same shape and direction. Cardiac arrhythmia occurred most frequently in women with thyrotoxicosis and in the period of the menopause. It was noticed that auricular fibrillation was more frequent in women than in men, while disorders of conduction occurred more frequently in men.

## Marriages

WILLIAM CLINTON WHITE, Washington, D. C., to Miss Frances Evelyn Daniel of Greenville, S. C., recently.

CHARLTON GILMORE HOLLAND, Danville, Va., to Miss Louise Fraser Beckwith at Petersburg, August 6.

HAROLD LAWTON ROGERS, Tuscaloosa, Ala., to Miss Frances Love McKenzie of Fulton, Ky., in July.

HENRY L. SKINNER, Battle Ground, Wash., to Miss Enid Carson of Vancouver, B. C., August 7.

JOHN WALLACE LYNCH, Seaford, Del., to Miss Ruth Marie Cooper of Greensboro, Md., April 17.

JAMES MAXEY DELL to Mrs. Rose H. Eddins, both of Gainesville, Fla., in Baltimore in July.

FRANKLIN McELHENY, Atlanta, Ga., to Miss Helen Porter of Greenwood, S. C., June 29.

HUGH D. DONAHUE, Boston, to Miss Rose Fitzgerald of Dorchester, Mass., recently.

NOEL CLARK MELLEN, Pensacola, Fla., to Miss Lorrain Bader of St. Louis, July 2.

JOHN M. DORSEY to Mrs. Charlotte Burns Hoefler, both of Chicago, June 29.



## Deaths

**Philip Marvel** ☉ Princeton, N. J., died suddenly September 6 at Bushkill, Pa., aged 81. Dr. Marvel was born in Kent County, Delaware, Sept. 15, 1856. He graduated from the University of Pennsylvania School of Medicine, Philadelphia, in 1884 and practiced for many years at Atlantic City. During his long active career Dr. Marvel served the American Medical Association in many capacities. In 1900-1901 he was third vice president and in 1902 was a member of the House of Delegates. In 1904 he was elected a trustee, serving until 1910, and again from 1911 to 1920. He was again a member of the House of Delegates in 1923, 1928-1930, 1934 and at the special session of 1935. In 1925 he was elected vice president for the second time. Dr. Marvel was president of the Medical Society of New Jersey in the year 1916-1917 and was made an honorary member at the annual meeting in 1935. He was a founder of the New Jersey Tuberculosis League, an Affiliate Fellow of the American Medical Association, a fellow of the American College of Physicians and a member of the American Clinical and Climatological Association. At frequent meetings of the Association in Atlantic City he aided greatly in making arrangements and in coordinating activities. The success and welfare of the organization were his first consideration.

**Edwin Beer** ☉ New York; Columbia University College of Physicians and Surgeons, New York, 1899; member of the American Surgical Association, and American Urological Association; member and past president of the Clinical Society of Genito-Urinary Surgeons; fellow of the American College of Surgeons; served during the World War; attending surgeon to the Mount Sinai Hospital and consulting surgeon to the Bellevue Hospital; in 1936 received a gold key of merit from the American Congress of Physical Therapy for his work on the treatment of tumors of the bladder; author of articles on gallstones, intestinal diseases, tumors of the bladder and surgical diseases of the kidney; aged 62; died, August 13.

**William Oliver Spencer**, Winston-Salem, N. C.; Jefferson Medical College of Philadelphia, 1891; member of the Medical Society of the State of North Carolina; formerly member of the state board of health; at one time health officer of Winston-Salem and Forsyth County; former president of the Forsyth County Medical Society and vice president of the Medical Society of the State of North Carolina; on the staffs of the City Memorial and North Carolina Baptist hospitals; aged 75; died, June 30, of diabetes mellitus.

**Abram Tucker Kerr** ☉ Ithaca, N. Y.; University of Buffalo School of Medicine, 1897; assistant in histology and pathology, 1894-1897, acting and adjunct professor of anatomy, 1898-1900, at his alma mater; assistant professor of anatomy, 1900-1904, professor of anatomy and secretary since 1904, Cornell University, acting professor of hygiene, 1920-1922, and acting professor and director of hygiene since 1935; member of the American Association of Anatomists; aged 65; died, August 15, of heart disease.

**David R. Clark** ☉ Detroit; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1895; professor of psychiatry at the Wayne University College of Medicine; member of the American Psychiatric Association; at various times on the staffs of the Receiving, Providence, Highland Park (Mich.) and the Florence Crittenton hospitals; aged 64; medical director of St. Joseph's Retreat, Dearborn, Mich., where he died, July 3, of carcinoma of the head of the pancreas.

**Louis Shepard De Forest**, New Haven, Conn.; Thüringische Landesuniversität Medizinische Fakultät, Jena, Thüringia, Germany, 1885; on the faculty of Yale University School of Medicine as clinical assistant in medicine 1890-1891, instructor in medicine 1891-1892, assistant professor of medicine 1892-1895 and clinical professor of medicine 1895-1899; aged 81; died, August 4, of arteriosclerosis.

**Thomas A. Copeland**, Athens, Ohio; College of Medicine and Surgery, Chicago, 1887; member of the Ohio State Medical Association; for many years secretary of the Athens County Medical Society; served on the local examining board during the World War; aged 73; died, July 9, of cerebral arteriosclerosis and hypertension.

**Clyde Lowe Casey**, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1913; member of the Illinois State Medical Society; served during the World War; aged 49; died, July 19, in Marion, Ill., of chronic lymphatic leukemia.

**Arthur Ivan Laughlin** ☉ Clarksville, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor,

1903; bank president; member of the school board; for many years secretary of a district board of education; aged 59; died, June 20, of angina pectoris.

**James Elston Adams**, Cushing, Okla.; University of Oklahoma School of Medicine, Oklahoma City, 1917; member of the Oklahoma State Medical Association; on the staff of the Masonic Hospital; aged 42; died, May 31, of injuries received in an automobile accident.

**Samuel Morton Creswell** ☉ Tacoma, Wash.; Rush Medical College, Chicago, 1926; past president of the Washington State Public Health Association; on the staff of the Tacoma General Hospital; health officer; aged 38; was killed, July 8, in an automobile accident.

**William Matthews Bigham**, Memphis, Tenn.; Missouri Medical College, St. Louis, 1881; member of the Tennessee State Medical Association; on the staff of St. Joseph's Hospital; aged 78; died, July 8, in the Gartley-Ramsay Hospital of uremia and pyelitis.

**John Joseph Fralinger**, Philadelphia; Jefferson Medical College of Philadelphia, 1912; member of the Medical Society of the State of Pennsylvania; also a pharmacist; on the staff of St. Agnes' Hospital; aged 55; died, June 21, of chronic myocarditis.

**Orton Horace Clark**, Pasadena, Calif.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1892; served during the World War; aged 74; died, July 26, in the University Hospital, Ann Arbor, Mich., of bronchopneumonia.

**Frank Nott Danforth** ☉ Texas City, Texas; University of Texas School of Medicine, Galveston, 1905; health officer; formerly member of the school board; aged 55; died, July 16, in the John Sealy Hospital, Galveston, of coronary thrombosis.

**Nelson Kaufman Fromm** ☉ Albany, N. Y.; Albany Medical College, 1908; associate professor of neurology at his alma mater; served during the World War; on the staff of the Albany Hospital; aged 56; died, June 22, of coronary disease.

**Scott Kenyon Gray**, Watervliet, N. Y.; Barnes Medical College, St. Louis, 1905; served during the World War; aged 61; on the staff of the Troy Hospital, where he died, June 29, of arteriosclerotic heart disease and diabetes mellitus.

**Roswell Kelsey Palmerton**, Deposit, N. Y.; College of Physicians and Surgeons, Baltimore, 1881; member of the Medical Society of the State of New York; formerly bank president; aged 81; died, June 7, of chronic nephritis.

**George Moore Braden**, Scotts, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1883; member of the Michigan State Medical Society; aged 81; died, July 10, of chronic myocarditis and arteriosclerosis.

**Bruce Keifer**, Paden City, W. Va.; Maryland Medical College, Baltimore, 1900; formerly mayor; served during the World War; aged 63; was found dead, June 12, of burns received when he fell asleep with a burning cigaret.

**Simrall Anderson**, Louisville, Ky.; University of Louisville (Ky.) Medical Department, 1901; served during the World War; on the staff of the St. Mary and Elizabeth Hospital; aged 58; died, July 7, of carcinoma of the liver.

**Forrest Hartley Badger** ☉ Winthrop, Maine; Medical School of Maine, Portland, 1894; past president of the Kennebec County Medical Society; formerly superintendent of schools; aged 68; died, July 13, of coronary thrombosis.

**James Warren Brewer**, Dayton, Ohio; Ensworth Medical College, St. Joseph, Mo., 1908; veteran of the Spanish-American War; formerly on the staff of the Veterans Administration Facility; aged 60; died, June 5.

**James Lyons Biggar**, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1903; served in the Boer and World wars; national commissioner of the Canadian Red Cross Society; aged 60; died, June 2.

**Daniel Emanuel Kauffman** ☉ St. Louis; St. Louis University School of Medicine, 1924; served during the World War; aged 40; on the staff of St. Mary's Hospital, where he died, June 16, of uremia and nephritis.

**Achilli Ubaldo Opipari**, Pittsburgh; Regia Università di Napoli Facoltà di Medicina e Chirurgia, Italy, 1906; member of the Medical Society of the State of Pennsylvania; aged 63; died, June 30, of cerebral hemorrhage.

**Patrick Coote**, Quebec, Que., Canada; M.B., Laval University Faculty of Medicine, Quebec, 1882, and M.D., 1884; emeritus professor of clinical ophthalmology and otology at his alma mater; aged 75; died, June 20.

**Edward Cary Ambler**, Roanoke, Va.; University of Virginia Department of Medicine, 1897; member of the Medical Society of Virginia; past president of the Roanoke Academy of Medicine; aged 68; died, July 11.

**Frederic Rudolph Kruger** \* Galveston, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1903; aged 59; died, June 8, in the John Sealy Hospital of pneumonia following a gallbladder operation.

**Henry M. Freas**, Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1885; member of the Medical Society of the State of Pennsylvania; aged 78; died, June 28, of chronic myocarditis.

**Elmer Ellsworth McAdoo**, Ligonier, Pa.; Jefferson Medical College of Philadelphia, 1891; formerly member of the state legislature, and member of the school board; aged 75; died, June 22, of coronary occlusion.

**Lester Levyn** \* Buffalo; Maryland Medical College, Baltimore, 1909; fellow of the American College of Physicians; member of the Radiological Society of North America; aged 50; died, June 24, of leukemia.

**James F. O'Leary**, Hartford, Conn.; University of Buffalo School of Medicine, 1897; formerly police commissioner; aged 64; died, June 29, in the St. Francis Hospital of hypertension and cerebral hemorrhage.

**Morris Manuta**, Johnstown, Pa.; Medical College of Virginia, Richmond, 1937; aged 25; intern at the Conemaugh Valley Memorial Hospital, where he died, June 14, following an operation for appendicitis.

**Harry Hambleton Stewart** \* Pottsville, Pa.; Baltimore Medical College, 1907; served during the World War; aged 68; on the staff of the LeCom B. Warne Hospital, where he died, June 17, of typhoid.

**Clarence C. Tolleson**, Long Beach, Calif.; University of Maryland School of Medicine, Baltimore, 1914; on the staff of the Community Hospital; aged 47; died, June 12, in a hospital at Hermosa Beach.

**Alvah Cochran Cummings** \* Newton, Mass.; Harvard University Medical School, Boston, 1901; for many years city physician; aged 64; died, July 11, at Grand Lake Stream, Maine, of heart disease.

**Arthur Gamble Hilliard**, Rochester, N. Y.; New York Medical College and Flower Hospital, New York, 1914; served during the World War; aged 50; died, June 19, of coronary thrombosis.

**Warren Clifford Batroff** \* Philadelphia; Medico-Chirurgical College of Philadelphia, 1903; veteran of the Spanish-American War; aged 58; died, June 20, in Merion Station, Pa.

**Luigi Balducci**, Rochester, N. Y., Regia Università di Napoli Facoltà di Medicina e Chirurgia, Italy, 1908; aged 55; died, May 2, of carcinoma of the prostate and secondary anemia.

**Jose I. Abuel y Villaseñor** \* Manila, P. I.; University of the Philippines College of Medicine, Manila, 1918; assistant professor of surgery at his alma mater; aged 45; died, May 7.

**Quinn Worth Gard** \* Seguin, Texas; Washington University School of Medicine, St. Louis, 1928; on the staff of the Seguin Hospital; aged 35; died, July 20, of coronary disease.

**George O. Davis**, Madison, Fla.; College of Physicians and Surgeons, Baltimore, 1903; member of the Florida Medical Association; aged 62; died, July 6, of coronary thrombosis.

**James Walter Myer**, Pelham, N. Y.; Harvard University Medical School, Boston, 1903; aged 65; died, June 11, in the Mount Vernon (N. Y.) Hospital of coronary thrombosis.

**Edward E. Rowell Sr.**, Stamford, Conn.; New York Homeopathic Medical College, 1877; aged 84; died, June 27, of cerebral thrombosis, arteriosclerosis and chronic nephritis.

**Lemuel Caro** \* New Rochelle, N. Y.; Cornell University Medical College, New York, 1921; aged 41; was killed, July 22, in an airplane accident near Bucharest, Rumania.

**Henry Smith Turrill** \* Kent, Conn.; Yale University School of Medicine, New Haven, 1910; for many years health officer; aged 53; died, June 7, of arteriosclerosis.

**James Lawrence Cornitcher**, Danville, Va.; Meharry Medical College, Nashville, Tenn., 1929; aged 39; died, July 7, in the Providence Hospital of intestinal obstruction.

**Morris Karl Diner**, New York; University and Bellevue Hospital Medical College, New York, 1937; intern at the Morrisania City Hospital; aged 23; died, June 9.

**Edgar Sargent Ferris**, Columbus, Ohio; Miami Medical College, Cincinnati, 1888; aged 72; died, July 6, of acute yellow atrophy of the liver and chronic myocarditis.

**Thomas Walter Witt**, Lake City, Fla.; Atlanta Medical College, 1915; formerly secretary of the Columbia County Medical Society; aged 46; died, June 8.

**Ervin S. Thompson**, Smoaks, S. C.; Medical College of the State of South Carolina, Charleston, 1910; aged 58; died, June 27, in a hospital at Walterboro.

**Samuel H. Vehslage**, Scarsdale, N. Y.; New York Homeopathic Medical College, 1879; aged 89; died, June 18, of cerebral arteriosclerosis and myocarditis.

**Franklin Henderson Doud**, Lysander, N. Y.; University of Michigan Homeopathic Medical School, Ann Arbor, 1893; health officer; aged 74; died, June 5.

**Abraham Malisoff**, Woodridge, N. Y.; Cornell University Medical College, New York, 1900; aged 61; died, June 18, of gastric carcinoma and heart disease.

**John Rumbaugh Shetter**, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1895; aged 77; died, June 18, of coronary occlusion.

**Henry A. Smith**, Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1875; aged 89; died, June 18, of myocardial degeneration.

**James Winter Brown**, Stoneboro, Pa.; University of Oklahoma School of Medicine, Oklahoma City, 1914; aged 52; died, June 29, of tumor of the brain.

**William Rich Collett**, Philadelphia; Jefferson Medical College of Philadelphia, 1931; on the staff of the Friends Hospital; aged 31; died, June 18.

**Alexander Joseph Burkholder**, Staunton, Va.; Baltimore University School of Medicine, 1902; aged 77; died, July 15, of myocarditis and heart block.

**Walter S. Spears**, Ardmore, Okla.; Fort Worth School of Medicine, Medical Department of Texas Christian University, 1902; aged 69; died in June.

**Hughlett Hardcastle**, Easton, Md.; University of Maryland School of Medicine, Baltimore, 1895; aged 76; died, June 18, in the Emergency Hospital.

**Abraham Shaw**, Philadelphia; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1899; aged 64; died, June 29, of cerebral hemorrhage.

**William Harter Everhard**, Medford, Ore.; Rush Medical College, Chicago, 1880; aged 81; died, July 17, of carcinoma of the lungs and prostate.

**William J. Bowen**, Mount Pleasant, S. C.; Medical College of South Carolina, Charleston, 1893; aged 69; died, July 14, of cardiac dilatation.

**David M. Buck, Jr.**, Asheville, N. C.; Medical College of Virginia, Richmond, 1925; aged 35; was killed, June 19, in an airplane accident.

**Carl L. Cheney**, De Kalb, Ill.; Chicago Homeopathic Medical College, 1902; aged 63; died, July 9, in the Public Hospital, of heart disease.

**Luther A. Donoho**, Wayland, Ky.; University of Tennessee Medical Department, Nashville, 1907; aged 54; died, July 2, in Martin, Tenn.

**Lawrence H. Smith** \* Hazleton, Pa.; College of Physicians and Surgeons, Baltimore, 1883; aged 78; died, June 20, of pneumonia.

**George Conrad Snyder**, San Francisco; Ohio Medical University, Columbus, 1901; aged 72; died, June 16, in Philadelphia.

**John Wesley Porter**, New Park, Pa.; University of Maryland School of Medicine, Baltimore, 1895; aged 72; died, June 26.

**William Franklin Smith**, Decherd, Tenn.; Vanderbilt University School of Medicine, Nashville, 1898; aged 70; died, June 18.

**Rafael Jacobsen**, Havana, Cuba; University of Pennsylvania School of Medicine, Philadelphia, 1913; aged 47; died, June 4.

**Walter Andrew Reichle** \* Spokane, Wash.; Creighton University School of Medicine, Omaha, 1924; aged 42; died, June 4.

**James P. Drafts**, Leesville, S. C.; University of Tennessee Medical Department, Nashville, 1899; aged 62; died, July 1.

**Gideon Meredith Freeman**, Los Angeles; Cooper Medical College, San Francisco, 1903; aged 58; died, June 15.

**Everett Herschel Winter**, Hollis, N. Y.; Long Island College Hospital, Brooklyn, 1899; aged 64; died, June 27.

**Wiley Claude Crump**, Lumberton, N. C.; Meharry Medical College, Nashville, Tenn., 1926; aged 42; died, June 20.

**Jacob S. Krebs**, Herndon, Pa.; College of Physicians and Surgeons, Baltimore, 1884; aged 76; died, June 10.

**William Jay Dugan**, Paris, Ill.; Missouri Medical College, St. Louis, 1899; aged 64; died, July 12.

## Correspondence

### SOLITARY TUBERCULOMA OF THE LIVER

*To the Editor:*—In an article which appeared in *THE JOURNAL* August 6, Herrell and Simpson report what they consider to be a case of solitary tuberculoma of the liver with an exceedingly rare "pathologic lesion." It is highly questionable whether the authors are justified in ascribing the cause of the condition to the tubercle bacillus on the weak evidence they present. The clinical course and laboratory data are not typical of tuberculosis, no mention is made of tests with tuberculin, and no evidence of tuberculosis elsewhere was found. Under these circumstances one cannot make a diagnosis of tuberculosis simply because of the presence of small granulomas and giant cells in the lesion. Many other conditions may give rise to similar granulomatous changes in the liver, among which may be mentioned chronic low grade infection with a mixture of bacteria, actinomycosis or other fungous infections, glanders, tularemia and undulant fever.

It would seem that before one could accept a diagnosis of the rare condition called tuberculoma of the liver it would be necessary to prove the diagnosis by the demonstration of tubercle bacilli in the lesion by tinctorial or cultural methods.

HOBART A. REIMANN, M.D., Philadelphia.

### AMPLIFICATION OF HEART AND LUNG SOUNDS

*To the Editor:*—The sweeping statement of Douglas Macfarlan (*THE JOURNAL*, June 18, p. 2069) that "amplification of heart and lung sounds is neither practical, nor desirable, nor needed for the physician with normal hearing" should not remain unchallenged.

Amplification has been made practical by several devices described in the literature:

- Beruti, J. A.: *Semana méd.* 30: 829, 1923.  
Duchosal, P., and Luthi, R.: *Arch. méd. d. mal. du cœur* 22: 806, 1929.  
Sell, H.: *Med. Klin.* 28: 150 (Jan. 29) 1932.  
Biering, W. L.; Bone, H. C., and Lockhart, M. L.: Use of the Electrostethograph for Recording Heart Sounds, *THE JOURNAL*, Feb. 23, 1935, p. 628.  
Narat, J. K.: *Illinois M. J.* 70: 131 (Aug.) 1936; *Ztschr. f. Kreislauforsch.* 29: 313 (May 1) 1937.

As to the desirability of the amplification, graphic recording of sounds is impossible without it. In turn, the importance of sound registration has been stressed by many prominent cardiologists:

- Cabot, R. C.: A Multiple Electrical Stethoscope for Teaching Purposes, *THE JOURNAL*, July 28, 1923, p. 298.  
Groedel, F. M.: *Verhandl. Deutsche Gesellsch. f. inn. Med.* 41: 372, 1929.  
Wohlers, H., and Duchosal, P.: *Arch. méd. d. mal. du cœur* 25: 1, 1932.  
Trendelenburg, F.: *Med. Klin.* 28: 146, 1932.  
Sacks, H. A., and Marquis, Harold: *Proc. Soc. Exper. Biol. & Med.* 32: 773 (Feb.) 1935.

Lack of space prevents enumeration of the great array of reasons why a graphic recording of sounds is desirable. Only a few can be mentioned here.

The customary method of auscultation with a stethoscope is fraught with the danger of personal equation, as the auditory perception varies greatly in different individuals. The matter becomes still more complicated by the lack of uniformity in terminology. Records obtained from the same patient at certain intervals enable the physician to follow the evolution of the condition and the effect of therapeutic measures. Some amplifying and recording devices offer facilities for a simultaneous auscultation of heart sounds by more than one person, so that an immediate comment or interpretation is possible. Tracings of heart sounds offer ample opportunity for investigations of theoretically and practically important cardiologic problems.

Apparatus for amplification and registration of heart sounds have been simplified to such an extent that they can be used not only in scientific laboratories but also by practicing physicians. Not the apparatus, be it a common stethoscope or an amplifying device, but the auscultating physician makes the diagnosis.

JOSEPH K. NARAT, M.D., Chicago.

This letter was sent to Dr. Macfarlan, who replies:

*To the Editor:*—My article dealt primarily with the acoustic characteristics of stethoscopes used in general practice, and it brought out the fact that they do not amplify sound. The statement under criticism, "Amplification of heart and lung sounds is neither practical, nor desirable, nor needed for the physician with normal hearing," is challenged by your correspondent, who states that amplification is desirable as being (1) possible of graphic recording (2) or in showing fine differences (a) unaffected by the "danger of the personal equation" and (b) the complication of "lack of uniformity in terminology." Undoubtedly, acoustic analysis of heart and chest sounds will advance to a science, but it will have to pass through a long period of development similar to the study of hearing across the frequency range. The latter has been intensively considered by a small group of otologists for at least ten years and is not yet out of the fog. Any of these workers will agree that the findings vary enormously with the type of instrument used in the testing (see the article by Austin A. Hayden, "Hearing Aids from Otologists' Audiograms," *THE JOURNAL*, August 13, p. 592). Graphic recording by all human means is subject to wide variation and error, and the incapacities of audion circuits and phonograph recordings are fully as objectionable as the personal equation present when the trained examiner is listening to the heart or lungs either without an instrument or with the common stethoscope.

Until a time when electrical amplification is perfected, I would say that I would not modify the statement "amplification of heart and lung sounds is neither practical, nor desirable, nor needed for the physician with normal hearing."

Since the publication of the original article, I have had many letters from physicians who get their best information from the use of the unaided ear. A number of them decried the substitution of instruments for trained observation, and it is worth recalling that in the human ear itself we have a mechanism infinitely more delicate than any instrument, to determine variation in the character and quality of sound.

DOUGLAS MACFARLAN, M.D., Philadelphia.

### INTENSIVE TREATMENT OF SYPHILIS

*To the Editor:*—In the Paris letters March 12 and June 25, published respectively in *THE JOURNAL* April 9 and July 23, appeared reports under the title "The Intensive Treatment of Syphilis." These reports emanated from Dr. Arnault Tzanch and Dr. Paul Chevallier. These authors are using massive doses of arsphenamine in the treatment of syphilis, using the drip method. One death is reported in their series. My purpose in this communication is to call attention to two points:

1. No mention is made by these authors of my prior work done in association with Dr. Louis Chargin and Dr. William Leifer (*The Application of the Intravenous Drip Method to Chemotherapy as Illustrated by Massive Doses of Arsphenamine in the Treatment of Early Syphilis*, *THE JOURNAL*, March 16, 1935, pp. 878-883). This is the more curious since in the official journal of the hospitals of Paris (*La semaine des Hôpitaux de Paris* in its issue of June 1, 1935, No. 11, pp. 328 to 335, under the title "Le goutte à goutte intraveineux en Amérique" by Dr. M. Ph. Dally) every bit of work I did on the intravenous drip has been abstracted, in most instances by literal translation, and on page 333 saying: "Le goutte à goutte a été essayé dans la syphilis, par Chargin et Leifer. Vingt-cinq hommes, en état

de syphilis primaire ou secondaire, recurrent pendant cinq jours en moyenne 4 gr. d'arséno-benzol, sans autre réaction qu'une fièvre quelquefois alarmante. Dans 95% des cas observés après cette stérilisation, le Wassermann resta négatif pendant trois mois, bien qu'aucune autre médication n'ait été employée. Mais ces essais, si encourageants qu'ils soient, sont encore à l'état expérimental."

2. More important is the fact that these workers are not following either the indications for treatment, the selection of patients or the technic which I described. Hence this work must not be confused with my work, which is in the process of more extensive confirmation and concerning which I shall publish a report at greater length at a later date when I have completed my plan of study.

HAROLD THOMAS HYMAN, M.D., New York.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### ACUTE ALCOHOLISM AND ANESTHESIA

To the Editor:—If a person is so completely under the influence of liquor as to be unconscious, could or would an anesthetic be administered to the person before complete recovery from intoxication, before an operation could be performed? One of the members of my office staff asked me this question, but I could not give him an answer. M.D., Illinois.

ANSWER.—A person who has become unconscious from the influence of too much alcohol is not a safe candidate for inhalation anesthesia or for general anesthetics administered by the rectal or intravenous route. Any person in this condition from the effects of alcohol is in a state of toxemia and more than likely the blood pressure is low, the patient's skin is moist and pallid and general anesthesia by inhalation or other route would be a definite hazard. One could not predict what the effect of a general anesthetic agent would be on the patient's cardiac mechanism or on the higher cerebral centers but it would probably be unfavorable. Minor surgical procedures can be, and have been, done on persons unconscious from the effects of too much alcohol, and the judicious use of local anesthesia may be tried if it is necessary. If the operation to be performed on a patient unconscious from the influence of alcohol must be done under general anesthesia, it is best to wait until the patient has recovered from the effects of the alcoholic excess. If the operation on the patient in this condition is one which requires immediate attention, regional methods of anesthesia should be employed. The usual supportive measures (administration of stimulants and intravenous administration of fluids) should be used.

### ARE FROGS POISONOUS TO EAT?

To the Editor:—I have three patients who had symptoms confined to the urinary tract with albumin and blood in the urine after eating green frogs. Are there any frogs which are poisonous to eat and do you think frogs are a factor in these cases? M.B., Canada.

ANSWER.—It is difficult to answer this inquiry because adequate information regarding the variety of frog eaten and the method of preparation is lacking.

The green or spring frog (*Rana clamitans*), which is commonly found in abundance in eastern North America from the Gulf of Mexico to Hudson Bay, is considered an edible variety. This frog is described by Wright (Frogs: Their Natural History and Utilization, U. S. Dept. of Commerce, Bureau of Fisheries, Document 888, 1920) as having two ridges down its back. "The forward upper parts are bright green; the posterior region brown or olive. The under parts are white, with some marbling; in the male the throat is yellow. This species reaches 3½ to 4 inches in length. . . ." It is understood, however, that several other varieties occurring in various parts of the United States are also commonly known as green frogs, and

that, in general, the green frog is not as widely used for food as the bullfrog or the spotted, or leopard, frog.

A search of the medical literature has revealed no reports of toxicity resulting from eating any variety of cooked frogs' legs. Opinions regarding the edibility of any particular variety appear to be based chiefly on size and relative abundance. Of course the possibility of spoilage or of contamination by the toxins of the skin of improperly dressed frogs should be considered. However, there appears to be no available evidence that any variety of frogs' legs is toxic when properly skinned and cooked.

### ORAL IMMUNIZATION FOR TYPHOID

To the Editor:—What is the present status of oral immunization against typhoid?

H. C. WIGER, M.D., Rice Lake, Wis.

ANSWER.—The work of Besredka was primarily responsible for initiating the use of oral typhoid vaccine. Essentially his claim was that, in addition to general immunity to bacteria, it is possible to produce immune bodies in the tissues locally. So far as the intestine is concerned, he felt that the preliminary treatment of bacteria with bile facilitates this mechanism.

Most of the statistical data presented in the various papers show evidence of difficulty in control. The papers deal principally with epidemics and are for the most part obviously poorly controlled. The laboratory work with animals, on the contrary, was usually satisfactory. However, even when agglutinins were obtained, it is obvious that the satisfactory production of these immune bodies in experimental animals is not necessarily conclusive evidence of the production of true immunity in man.

Judging from the available evidence, it would seem that oral vaccination should be eliminated entirely as a method of treatment. As a means of preventive immunization, however, it may be justifiable to use it in those instances in which the subcutaneous method is not practicable.

Pending more conclusive evidence for the value of oral typhoid vaccination, commercially available products have not been accepted by the Council on Pharmacy and Chemistry.

### PLEURISY WITH EFFUSION AND SYPHILIS

To the Editor:—A Negro aged 25, having right pleurisy with effusion, gives no history of contact to tuberculosis. His Mantoux test is negative to tuberculin both 1:5,000 and 1:100. He had a chancre three years ago, for which he received treatment for only three months. His blood Wassermann reaction, as well as the complement fixation test for syphilis on the pleural fluid, is 4 plus. A roentgenogram taken after tapping is negative for parenchymal involvement of the contralateral lung as well as of the lung area above the fluid level. Could one positively exclude tuberculous infection, assuming that the technic of the Mantoux test is correct? Is one justified in making a diagnosis of syphilitic pleurisy with effusion, should such an entity exist? Is it possible for pleural fluid of a tuberculous pleurisy to give a positive complement fixation test for syphilis? M.D., New Jersey.

ANSWER.—It would be impossible absolutely to exclude tuberculosis on the basis of the negative tuberculin test. No biologic test is 100 per cent accurate and there is the occasional person with definite tuberculosis whose tissues apparently are not sensitized sufficiently to tuberculo-protein to react to the tuberculin test. Probably this group does not constitute more than 1 or 2 per cent of infected persons. A similar situation has been known since 1893 to exist among animals. In extensive disease of an acute nature which is overwhelming, either in patients who are nearing death with chronic disease or in patients with acute diseases such as meningitis, pneumonia and generalized miliary disease, the tissues become desensitized and thereafter fail to react to the tuberculin test. However, with no manifestation of clinical lesions except pleurisy with effusion such desensitization should not have occurred. It would be worth while to centrifuge some of the fluid and stain the sediment for tubercle bacilli. If they are not found, Corper's medium might be used to advantage for the growth of cultures or animals might be inoculated. In this manner tuberculosis can be reasonably well ruled out if no positive observations result.

It is possible that beneath the fluid level a lesion exists in the lung which might be due to any one of a number of infections. Complete removal of the fluid, followed by x-ray film examination, should determine this with a reasonable degree of accuracy. It is possible for a gumma to be present in the lung and associated with the pleural effusion. However, gumma of the lung apparently is a rare condition and difficult to diagnose accurately. Diagnosis is sometimes made wholly on the response to antisyphilitic treatment. Either gumma of

the lung or basal lobe tuberculosis would cast a shadow on the x-ray film after the fluid is removed if the lesion is macroscopic.

Pleurisy with effusion caused by *Spirochaeta pallida* per se apparently is an extremely rare condition; otherwise one would expect to find reports concerning it in medical literature. Therefore one would need more evidence than a four plus complement fixation test for syphilis on the pleural fluid, since fluid removed from any serous cavity of a syphilitic patient might show such a reaction even though the immediate cause of the accumulation of fluid was not syphilis.

#### ALLERGY FROM YELLOW JACKET STING

*To the Editor:*—A druggist aged 65 says he was stung by a hornet when 12 years old and was unconscious for an hour. He has had good health ever since except for an attack of pneumonia about eighteen years ago which terminated with empyema and rib resection. He has been robust since recovery. Two years ago he was stung by a yellow jacket and was unconscious for twenty minutes. A few days ago he was again stung by a yellow jacket. He was unconscious for more than two hours and has felt miserable ever since. He was alone when this occurred, and when he regained consciousness he could not speak for quite a while. A gummy-like perspiration stood out all over him and his clothing was saturated. I did not see him at either time so I cannot give definite data as to pulse or blood pressure. Please discuss this condition with reference to treatment. It took from ten to fifteen minutes each time after being stung before he became helpless. If he could carry something with him for a prophylactic he would have time to use it. Honey bees and bumblebees do not affect him in the same way.

A. J. FAWCETT, M.D., Glendale, Ore.

*ANSWER:*—The case described is unquestionably an instance of anaphylactic-like shock from sensitiveness to bee sting. A number of such cases have been reported. Most of the case reports mention the honey bee as the source of allergy. Many others do not specify the species of bee involved. It is not surprising that there should be such a high grade specificity in the patient so that he would be allergic to the hornet and yellow jacket and not to the honey bee or bumble bee. Among the first authentic cases on record are those of Waterhouse (*Lancet* 1:946, 1914) and Hubert (*Lyon méd.* 138:678, 1926). In experiments on bee sensitive individuals Benson and Semenor (*J. Allergy* 1:105 [Jan.] 1930) found that the allergy is not one of specificity to be venom but rather an allergy to the protein of the whole bee. There are several reports dealing with the effectiveness of specific desensitization of these bee sensitive individuals with an extract made from the bees. The following references will be worth while in that connection: Braun (*S. African M. Rec.* 23:408 [Sept. 26] 1925); Benson and Semenor (*J. Allergy* 1:105 [Jan.] 1934). One might consider such specific treatment in the case cited in the query. However, because of the infrequency of these attacks and because of lack of occupational exposure, such treatment would probably be impractical. The use of a hypodermic injection (0.5 cc. of 1:1,000) of epinephrine hydrochloride immediately after the bee sting might minimize the allergic reaction to a considerable extent.

#### PERNICIOUS ANEMIA AND DIARRHEA

*To the Editor:*—A married woman aged 59 was operated on for exophthalmic goiter in 1928 and had pernicious anemia in 1933. Since then she has taken two capsules of extralin three times a day, weekly intramuscular injections of concentrated liver extracts, reduced iron and twenty drops of diluted hydrochloric acid. Recently she had explosive watery stools, as frequent as six a day. The blood count on July 5 showed hemoglobin 84 per cent, erythrocytes 4,350,000, leukocytes 10,000, color index 0.9 plus with a differential count of neutrophils 46 per cent, eosinophils 3 per cent, small lymphocytes 43 per cent, large lymphocytes 4 per cent, metamyelocytes 4 per cent, erythrocytes normal. Can you suggest treatment to overcome watery stools? M.D., Pennsylvania.

*ANSWER:*—Whether the diarrhea in this case is related to the anemia or to the treatment the patient is receiving is not clear. The stools should be examined for such conditions as amebic dysentery and the possibility of carcinoma of the colon should be considered. The only possible explanations on the basis of the data given are that: 1. The diarrhea may be related to the iron. This is not likely, since the patient has taken iron for several years without symptoms. 2. The diarrhea may be on a vitamin deficiency basis. A deficiency in vitamin B is sometimes seen accompanying pernicious anemia. This can be remedied by giving an ounce of brewers' yeast three times daily or by using relatively unconcentrated liver extracts. Many of the newer ultraconcentrates do not contain the substance necessary to stop the diarrhea in vitamin B deficiencies. 3. The diarrhea may be related to the lack of acid in the stomach; in this case an increased dosage of hydrochloric acid might be given with advantage.

#### LONG CONTINUED ATTACKS OF EPIGASTRIC PAIN AND VOMITING

*To the Editor:*—An insurance agent, aged 52, married, had a mastoid operation at 25. When about 30 years old he began having attacks of epigastric pain accompanied by vomiting. An appendectomy failed to give relief. Ever since this time, at intervals of from a few weeks to six months, he has had attacks of epigastric pain of increasing severity. Profuse secretion of saliva precedes vomiting a half hour to an hour. The vomitus is at first stomach contents followed by the contents of the duodenum. The pain in the epigastrium is severe and during some of the attacks vomiting occurs every fifteen minutes and has lasted several days. Occasionally there is remission of two days with recurrence of the pain and vomiting. The patient is well nourished and if free from attacks for several months gains weight rapidly. The heart and lungs are normal and the head and neck are normal aside from the scar from the mastoidectomy. There is no abdominal tenderness except during an attack, when it is confined to an area 5 cm. in diameter slightly to the right of the midline and just below the costal margin. The urine is normal and the Wassermann reaction negative. The basal metabolic rate is from minus 24 to minus 16. X-ray examination of the gastrointestinal tract and the gall bladder (dye administered) is negative. Chemical examination of the stomach contents shows no free or combined hydrochloric acid. Blood counts are normal. The blood chemistry is negative. The patient has received thyroid, diluted hydrochloric acid and phenobarbital without relief. Any information you can offer regarding diagnosis or treatment will be appreciated.

M.D., California.

*ANSWER:*—The occurrence of epigastric pain and vomiting over a period of twenty-two years without physical deterioration argues against serious organic disease. A food sensitization should be ruled out. Sea foods, certain nuts and fruits are notorious offenders and many other foods have been implicated. Has any relationship between the ingestion of certain foods and the attacks been noted? Patch tests might be helpful.

Salivation for a considerable period before the vomiting suggests the possibility of a diaphragmatic hernia or an esophageal diverticulum. Both of these conditions may produce reflex pylorospasm and vomiting. A small hernia through the esophageal opening might easily escape detection. Such a hernia is best demonstrated by examining fluoroscopically following the ingestion of barium sulfate and with the patient in the Trendelenburg position. The intermittence of the attacks would be based on the assumption that the abdominal contents did not constantly protrude through the esophageal orifice. The less likely esophageal diverticulum should be sought for by fluoroscopy at various angles. Osteo-arthritis of the spine has been known to produce spasm of the gastrointestinal tract through irritation of the sympathetic nerves. This possibility seems unlikely in this instance, but is worth consideration.

The other common causes of vomiting in the absence of gastrointestinal disease seem fairly well ruled out either by the examination or by the time the condition has persisted. Among these causes are gallbladder and kidney stone, movable kidney, intestinal parasites, brain tumor, myelitis, tabes and various intoxications.

The achlorhydria requires further consideration. If the achlorhydria is complete and continuous, one must consider the various causes of this condition. In view of the relatively good health between the attacks, it seems unlikely that a continuous achlorhydria exists. Before it is assumed that such is the case, the secretory apparatus should be stimulated with alcohol or with histamine.

Lastly, nervous vomiting must be considered. There is no doubt that in an individual with a certain neurogenic background emotional stress will produce such a picture as is described. The acidity might be explained on a similar basis. It should be remembered that this diagnosis should not be made until all organic causes have been ruled out.

Intelligent suggestions for treatment cannot be made until a satisfactory diagnosis is achieved.

#### TESTS FOR SPIROCHETAL JAUNDICE

*To the Editor:*—How should one prepare a specimen of blood for dark-field examination for *Leptospira interrogans* of Weil's disease? These organisms are found in the blood during the first week or before the onset of icterus.

SAMUEL IRGANG, M.D., New York.

*ANSWER:*—Considerable difference of opinion exists concerning the reliability and the technic of diagnosing Weil's disease by the darkfield demonstration of spirochetes (*Leptospira interrogans*) in human blood. There is no generally accepted method of performing this test. Best results are secured during the first five days of the disease.

The following methods can be tried: 1. Examine fresh citrated whole blood directly. 2. Centrifuge fresh citrated blood at a speed just sufficient to precipitate the blood cells and examine a thick layer of the supernatant plasma. It has been shown that high speeds are necessary to precipitate the spirochetes. 3. Separate the blood cells by the aforementioned method.



Centrifuge the plasma at high speed (3,500 revolutions per minute) for several minutes, remove a portion of the supernatant plasma and repeat several times. In this manner it may be possible to concentrate the spirochetes from the original volume of blood into a cubic centimeter of plasma, thus rendering their detection easier.

A positive test confirms the diagnosis of Weil's disease. A negative test proves nothing, since many investigators have failed to demonstrate spirochetes by this method in proved cases of Weil's disease.

Beginning about the tenth day and increasing until the twentieth day, spirochetes appear in the urine and may occasionally be demonstrated by darkfield examination of the sediment from 50 cc. of freshly voided urine.

Weil's disease presents such a variable clinical picture that laboratory procedures should confirm or reject every clinical suspicion of its presence. Unfortunately many laboratories are not equipped for this type of work. If the darkfield examination proves unsuccessful, other tests should be tried. These include (1) inoculation of blood or urine into guinea pigs, (2) culture of the patient's blood, (3) agglutination procedures (positive in increasing titer after the sixth to eighth day of the disease), (4) the complement fixation test, (5) the precipitation test and (6) the adhesion test.

The following papers review the present status of Weil's disease in the United States and contain references to the extensive literature:

Gaines, A. R., and Johnson, R. P.: Weil's Disease, *Arch. Int. Med.* 60: 817 (Nov.) 1937.

Jeghers, H. J.; Houghton, J. D., and Foley, J. A.: Weil's Disease, *Arch. Path.* 20: 447 (Sept.) 1935.

#### LICE FROM SWIMMING POOL

*To the Editor:*—Please inform me whether one would be likely to pick up head lice in a swimming pool. The theory advanced is that head lice will leave the human head when submerged in water. There has been an epidemic of head lice among children using a local pool.

M.D., New Jersey.

*ANSWER:*—Yes, a swimming pool might be a good source of pediculosis capitis among children, whether the lice swim or stay on the head, for children in play handle each others' heads and swap caps. No child with head lice should be admitted to a swimming pool or any other playground.

#### "CREOSOTE OIL" IN CONJUNCTIVA

*To the Editor:*—In the process of creosoting lumber, the creosote oil often gets into the eyes of the workers. This seems to be quite painful but does not result in serious injury. An oily solution seems to be the best thing to use, as creosote will not mix with water. What is the correct treatment?

M.D., Michigan.

*ANSWER:*—"Creosote oil" is the name generally applied to the fraction of the coal tar distillate which boils between 200 and 300 C. According to the specifications pertaining to the physical characteristics is a clause that "creosote oil" must contain from 8 to 10 per cent of the phenols as shown by extraction with sodium hydroxide solution. Among other substances in this greenish yellow fluorescent liquid are naphthalene, anthracene, pyridine, quinoline and acridine. Some of these are water soluble while others are not, but all are irritating to the conjunctiva. Consequently it is impossible to say which of the constituents in "creosote oil" cause the conjunctival irritation and which solvent is proper. But as in the case of any other irritating chemical substance that enters the conjunctival sac, mechanical flushing is of greater value than the use of a solvent which in itself may be irritating.

#### PRESCRIPTION WRITING

*To the Editor:*—For years I have been using the British method for prescribing solutions; e. g., dilaudid, gr. 1/64; ammonii chloridi, gr. ii; syrupi cerasi ad 5i; M mitte doses, No. xxxii Sig 5i every 3 hours for cough. I have been criticized by a pharmacist for using this method. If it is right to use this method for pills, capsules and powders, why not for liquids?

M.D., Massachusetts.

*ANSWER:*—Writing for single doses in prescriptions, whether for liquid or solid medication form, is decidedly objectionable if for no other reason than that the necessary multiplication must be carried out by the pharmacist, who might have no one to check him in case he makes a mistake. When the physician does his full duty by the prescription and writes it in its finished form, including the necessary multiplication, two checks are exerted on a possible mistake in calculation: by the physician in his "proof reading" of the prescription and by the pharmacist who will, if he has any doubt, actually divide the total quantity

by the prescribed number of doses to make sure that no mistake has been made. If the patient dies in consequence of a mistake, the misfortune is just as great whether it is the doctor's or the druggist's fault, and it is less likely to happen if both bear the responsibilities as they should. Medical teachers sometimes call the simple dose method of prescribing the "lazy doctor's document."

#### HARDENING SKIN OF HANDS?

*To the Editor:*—The girls working in an industry in Easton are subject to numerous blisters and defoliation of the skin as a result of taping coils with a plain untreated cotton tape. This tape is wrapped about the coil, each turn of the tape overlapping the preceding turn. The girls pull firmly on the tape at each turn, and the subsequent friction causes the blistering and lacerations. Could you suggest any hardening or toughening solution for the fingers? It is my understanding that pugilists use a strong briny solution for this purpose.

JOHN HOWELL WEST, M.D., Easton, Pa.

*ANSWER:*—It is true that prize fighters soak their fists in brine to toughen them. Whether this is a practical solution of the problem is not at all certain. Experiment is necessary to decide. Care must be taken that the brine salt is not allowed to crystallize on the skin, for salt crystals are definitely harmful. Fish picklers, those who prepare gut for violin strings and other purposes and those who pack ice cream in rock salt and ice have chronic ulcers, called "salt holes," and various infections of the skin. Rinsing with water and the use of fats on the skin protect against this harmful action.

#### UNEQUALLY DEVELOPED BREASTS AND MENSTRUAL IRREGULARITY IN GIRL

*To the Editor:*—A girl aged 15 complains of menstrual irregularity and of unequal development of the breasts. She is 63 inches (160 cm.) tall, weighs 132 pounds (60 Kg.) and has a blood pressure of 123 systolic, 80 diastolic and a heart rate of 72. She has been menstruating for two and one-half years, her periods being from five to six weeks apart. The flow is moderate, lasting from four to five days; she has no cramps and doesn't pass any clots. She is well developed and has a fair growth of hair on the upper lip. The thyroid gland is not enlarged. The chest is symmetrical. The right breast is rather large, with a moderately well developed areola. The nipple is inverted. The left breast is about a fourth the size of the right and has the appearance of an 11 or 12 year old girl's breast. The nipple is not well developed and is inverted. There is some tendency toward a panniculus adiposus in the lower part of the abdomen. The pubic hair and external genitalia are normal. Rectal examination shows a retroverted uterus of normal size for the patient's age. The parents of the patient are both of small stature. An older sister is only 4 feet 11 inches (150 cm.) tall and has a low basal metabolic rate and some menstrual irregularity. A younger brother is below normal in weight and height for his age, although x-ray examination of the wrist bones shows normal development for his age. He is mentally alert but his mother states that he is slow in coming to in the morning and also slow in performing given tasks. Further inquiries in the family history elicited the fact that the patient has a cousin with unequally developed breasts. What course should be followed to equalize the breasts? What suggestions can be given for the correction of the menstrual irregularity?

M.D., Missouri.

*ANSWER:*—There is no safe way to attempt to equalize this patient's breasts except by surgical means and this is surely not advisable. If one breast were of huge proportions, a surgical operation might be justified but not otherwise. There is likewise no need to attempt to correct the patient's menstrual irregularity because it will do no harm to leave it as it is. Even if the prolonged menstrual interval persists for a year, there is still no reason to attempt to change it.

#### TORTICOLLIS IN INFANT

*To the Editor:*—A girl, 1 month old, delivered with low forceps, is found to have a rigid sternocleidomastoid with slight torticollis. What is your opinion as to the best time to operate and the best operative and postoperative procedures? The baby now weighs 8 pounds (3.6 Kg.); her birth weight was 7 pounds (3.2 Kg.). She now gets only bottle feedings.

M.D., Illinois.

*ANSWER:*—Torticollis due to hemorrhage within the sternocleidomastoid muscle is treated in the infant by gentle passive stretching of the head into an overcorrected position, to be done several times daily. This will frequently prevent permanent contracture and deformity. If the hemorrhage has extensively destroyed the muscle fibers and fibrosis occurs, it may later be necessary to sever the shortened fibrous bands. Usually this procedure can be delayed until after the first year. When surgical treatment is necessary it is best done by exposure of the sternal and clavicular ends of the fibrosed muscle, all contracted fibrous bands being severed. Postoperatively a plaster dressing which holds the head in an overcorrected position is used for a period of from three to six weeks. Passive and active stretching should be continued until there is no tendency for recurrence of the contracture.

## EPIDEMIC DIARRHEA OF NEWBORN

*To the Editor:*—Last week I referred a case of infant feeding to a pediatrician in Omaha who stated that the epidemic of infant deaths in a Chicago hospital last fall, given so much attention in the newspapers, was due to Karo syrup. Was there any such report filed or made in the final summary by the people who had those deaths under investigation? At the University Hospital at Iowa City Karo syrup has been used extensively in the past, but I have had no occasion to ask about it lately. It was rather a jolt to me to hear this, and being ignorant about the matter I turn to you for advice.

J. CLARK COOPER, M.D., Villisca, Iowa.

**ANSWER.**—In the recent epidemic of diarrhea in the newborn, which occurred in a Chicago hospital, careful investigations failed to reveal the exact cause.

There was no evidence obtained that the condition was due to the use of any specific type of food, either carbohydrate or milk itself. Although several types of organisms were isolated from the stools and at necropsy, none of these were proved causative.

Several of the infants who suffered from the disease were completely breast fed. Others, while artificially fed, did not receive Karo syrup. Several types of sugar were employed.

A careful search of the literature has failed to reveal any outbreaks of epidemic diarrhea due to the syrup mentioned.

## EVIPAL SODIUM RECTALLY

*To the Editor:*—Referring to Dr. Alfred E. Jones's article on Basal Anesthesia: The Use of Evipal by Rectum in THE JOURNAL April 30, I should like to ask the following question: If evipal sodium is destroyed by the liver, why is a 3 Gm. dose by rectum, which is absorbed by the portal circulation, not more dangerous than 1 Gm. by vein, which has to go through the systemic circulation before reaching the liver?

D. W. MATTHAEI, M.D., Fessenden, N. D.

**ANSWER.**—If 3 Gm. of evipal sodium is placed in the portal circulation at one time, as by direct injection into one of the hemorrhoidal veins, it would certainly be more dangerous than 1 Gm. injected into the cubital vein. Since 3 Gm. by rectum is even less toxic than 1 Gm. intravenously, the answer is that the drug is absorbed more slowly and therefore reaches the liver more slowly by the rectal route than when administered intravenously.

## POSSIBLE HARM FROM SODIUM BICARBONATE

*To the Editor:*—Sodium bicarbonate will tarnish metal. How many grains may be taken on an empty stomach without injury?

M.D., New Jersey.

**ANSWER.**—Sodium bicarbonate is, on the whole, quite a harmless substance even when taken on an empty stomach. It is indeed taken with benefit by many sufferers from gastric catarrh and the usual dose in such cases is 1 Gm. (15 grains) in a cup of water as hot as one can drink it. Much larger doses are used in acidosis. When taken in teaspoonful doses and before each meal by a patient there is a possibility that the effect of the alkali on the system may lead to alkalosis.

## INTRASPINAL THIAMIN CHLORIDE

*To the Editor:*—In Queries and Minor Notes (THE JOURNAL, May 28) mention is made of the danger of intraspinal injection of thiamin chloride. In my preliminary report entitled "The Intraspinal (Subarachnoid) Injection of Vitamin B<sub>1</sub> for the Relief of Intractable Pain and for Inflammatory and Degenerative Diseases of the Central Nervous System," which appeared in the *American Journal of Surgery* 39:495 [March] 1938), emphasis was laid on the possibility of vitamin B<sub>1</sub> poisoning from overdosage and the possible harmful effects of using thiamin chloride not especially prepared for intraspinal injection. It might be well to emphasize again the precautions mentioned in this article. It might be helpful to call attention to my article on this subject for the details of the rationale and plan of treatment in cases of multiple sclerosis. To date I have given 201 intraspinal injections of vitamin B<sub>1</sub> without a single fatality.

ELIAS L. STERN, M.D., New York.

## NICOTINE IN CIGARETS—A CORRECTION

In Queries and Minor Notes, August 6, page 560, under the title "Nicotine in Cigaretts" it is stated: "If one cigaret fell into a bottle of milk, the amount of nicotine extracted would hardly exceed 2 mg." This should have read: "If one cigaret fell into a bottle of milk, the amount of nicotine extracted would approximate 20 mg. This amount of nicotine, as well as some of the other extractives which would go into solution in the milk, would result in nausea before any toxic effects would develop and therefore the effect would probably not be particularly harmful."

## Medical Examinations and Licensure

## COMING EXAMINATIONS

## STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 20-22. Sec., Dr. J. N. Baker, 517 Dexter Ave., Montgomery.

ARIZONA: *Basic Science*. Tucson, Sept. 20. Sec., Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson.

ARKANSAS: *Medical (Regular)*. Little Rock, Nov. 3-4. Sec., State Medical Board of the Arkansas Medical Society, Dr. L. J. Kosminsky, Texarkana. *Medical (Eclectic)*. Little Rock, Nov. 3. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock. *Basic Science*. Little Rock, Nov. 7. Sec., Mr. Louis E. Gebauer, 701 Main St., Little Rock.

CALIFORNIA: *Reciprocity*. Los Angeles, Nov. 16. *Written examination*. Sacramento, Oct. 17-20. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: Denver, Oct. 5-7. Sec., Dr. Harvey W. Snyder, 831 Republic Bldg., Denver.

CONNECTICUT: *Basic Science*. New Haven, Oct. 8. *Prerequisite to license examination*. Address State Board of Healing Arts, 1895 Yale Station, New Haven. *Medical (Regular)*. Hartford, Nov. 8-9. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Medical (Homoeopathic)*. Derby, Nov. 8-9. Sec., Dr. Joseph H. Evans, 1488 Chapel St., New Haven.

DELAWARE: Dover, July 11-13. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: *Basic Science*. Washington, Dec. 26-27. *Medical*. Washington, Jan. 9-10. Sec., Commission on Licensure, Dr. George C. Ruhland, 203 District Bldg., Washington.

FLORIDA: Jacksonville, Nov. 14-15. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, Oct. 11-12. Joint-Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

HAWAII: Honolulu, Oct. 10-13. Sec., Dr. James A. Morgan, 48 Young Bldg., Honolulu.

IDaho: Boise, Oct. 4-5. Commissioner of Law Enforcement, Hon. J. L. Balderston, 205 State House, Boise.

ILLINOIS: Chicago, Oct. 18-20. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.

INDIANA: Indianapolis, June 20-22. Sec., Board of Medical Registration and Examination, Dr. J. W. Bowers, 301 State House, Indianapolis.

IOWA: *Basic Science*. Des Moines, Oct. 11. Corres. Sec., Mr. H. W. Grefe, Capitol Bldg., Des Moines.

KENTUCKY: Louisville, Dec. 6-8. Sec., State Board of Health, Dr. A. T. McCormack, 620 S. Third St., Louisville.

MAINE: Portland, Nov. 8-9. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Medical (Regular)*. Baltimore, Dec. 13-16. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Medical (Homoeopathic)*. Baltimore, Dec. 13-14. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, Nov. 8-10. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 413-F State House, Boston.

MICHIGAN: Lansing, Oct. 12-14. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-3-4 Hollister Bldg., Lansing.

MINNESOTA: *Basic Science*. Minneapolis, Oct. 4-5. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical*. Minneapolis, Oct. 18-20. Sec., Dr. Julian F. Du Bois, 350 St. Peter St., St. Paul.

MISSISSIPPI: *Reciprocity*. Jackson, December. Asst. Sec., State Board of Health, Dr. R. N. Whittfield, Jackson.

MISSOURI: Kansas City, Oct. 18-20. State Health Commissioner, Dr. Harry F. Parker, State Capitol Bldg., Jefferson City.

MONTANA: Helena, Oct. 4. Sec., Dr. S. A. Cooney, 216 Power Block, Helena.

NEBRASKA: *Basic Science*. Lincoln, Oct. 4-5. *Medical*. Lincoln, Nov. 25-26. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEVADA: Carson City, Nov. 7-9. Sec., Dr. John E. Worden, Capitol Bldg., Carson City.

NEW JERSEY: Trenton, Oct. 18-19. Sec., Dr. James J. McGuire, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, Oct. 10-11. Sec., Dr. Le Grand Ward, 135 Palace Ave., Santa Fe.

NEW YORK: Albany, Buffalo, New York, and Syracuse, Sept. 19-22. Chief, Bureau of Professional Examinations, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

NORTH CAROLINA: *Reciprocity*. December. Sec., Dr. William D. James, The Hamlet Hospital, Hamlet.

NORTH DAKOTA: Grand Forks, Jan. 3-6. Sec., Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.

OKLAHOMA: *Basic Science*. Oklahoma City, Nov. 30. Sec. of State, Hon. Frank C. Carter, State Capitol Bldg., Oklahoma City. *Medical*. Oklahoma City, Dec. 14. Sec., Dr. James D. Osborn Jr., Frederick.

OREGON: *Basic Science*. Portland, Nov. 19. Sec., State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.

PENNSYLVANIA: Philadelphia, January. Sec., Board of Medical Education and Licensure, Dr. James A. Newpher, 400 Education Bldg., Harrisburg.

RHODE ISLAND: Providence, Oct. 6-7. Chief, Division of Examiners, Mr. Robert D. Wholey, 366 State Office Bldg., Providence.

SOUTH CAROLINA: Columbia, Nov. 8. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

SOUTH DAKOTA: Pierre, Jan. 17-18. Director of Medical Licensure, Dr. B. A. Dyar, State Board of Health, Pierre.

TENNESSEE: Memphis, Sept. 28-29. Sec., Dr. H. W. Qualls, 130 Madison Ave., Memphis.

VERMONT: Burlington, Feb. 14. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, Dec. 14-16. Sec., Dr. J. W. Preston, 30½ Franklin Road, Roanoke.

WEST VIRGINIA: Bluefield, Oct. 31-Nov. 2. Sec., Public Health Council, Dr. Arthur E. McClue, State Capitol, Charleston.

WISCONSIN: *Basic Science*. Madison, Sept. 24. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee. *Medical*. Madison, Jan. 10-14. Sec., Dr. Henry J. Gramling, 2203 S. Layton Blvd., Milwaukee.

WYOMING: Cheyenne, Oct. 3 (probable date). Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

#### NATIONAL BOARD OF MEDICAL EXAMINERS SPECIAL BOARDS

Examinations of the *National Board of Medical Examiners* and *Special Boards* were published in *THE JOURNAL*, September 10, page 1041.

#### Nevada May Examination

Dr. John E. Worden, secretary, Nevada State Board of Medical Examiners, reports the written examination held at Carson City, May 2, 1938. The examination covered eleven subjects and included ninety-nine questions. An average of 75 per cent was required to pass. Three candidates were examined, all of whom passed. Two physicians were licensed by reciprocity after an oral examination. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Southern California School of Medicine	.....	(1938)	85.6
Long Island College of Medicine	.....	(1934)	84.4
Medical College of the State of South Carolina	.....	(1930)	80.9

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Cornell University Medical College	.....	(1921)	New York
University of Pennsylvania School of Medicine	.....	(1927)	S. Dakota

#### North Carolina June Examination

Dr. B. J. Lawrence, former secretary, North Carolina State Board of Medical Examiners, reports the written examination held at Raleigh, June 13, 1938. The examination covered seven subjects. Eighty-five candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
College of Medical Evangelists	.....	(1938)	1
Yale University School of Medicine	.....	(1928)	1
George Washington University School of Medicine	.....	(1938)	1
Georgetown University School of Medicine	.....	(1933), (1938, 2)	3
Howard Univ. College of Medicine	.....	(1935), (1937), (1938, 2)	4
Emory University School of Medicine	.....	(1936), (1938, 7)	8
University of Georgia School of Medicine	.....	(1938)	1
Northwestern University Medical School	.....	(1937)	1
Rush Medical College	.....	(1938)	1
University of Louisville School of Medicine	.....	(1937), (1938, 2)	3
Johns Hopkins University School of Medicine	.....	(1934), (1938, 2)	3
University of Maryland School of Medicine and College of Physicians and Surgeons	.....	(1938)	1
Washington University School of Medicine	.....	(1937)	1
Cornell University Medical College	.....	(1938)	1
New York University College of Medicine	.....	(1938, 3)	3
University of Rochester School of Medicine	.....	(1930)	1
Duke University School of Medicine	.....	(1937, 3), (1938)	4
Jefferson Medical College of Philadelphia	.....	(1936), (1938, 8)	9
Temple University School of Medicine	.....	(1938, 8)	8
University of Pennsylvania School of Medicine	.....	(1938, 9)	9
Woman's Medical College of Pennsylvania	.....	(1938, 2)	2
Medical College of the State of South Carolina	.....	(1938, 4)	4
Vanderbilt University School of Medicine	.....	(1931), (1938, 2)	3
Medical College of Virginia	.....	(1938, 10)	10
McGill University Faculty of Medicine	.....	(1937), (1938)	2

Fifty-two physicians were licensed by endorsement at the meetings held May 2, June 13 and July 28. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Columbian University Medical Department, D. C.	.....	(1899)	Dist. Colum.
Emory University School of Medicine	.....	(1922)	Georgia
University of Georgia School of Medicine	.....	(1935), (1937)	Georgia
University of Illinois College of Medicine	.....	(1934)	Missouri
University of Louisville Medical Department	.....	(1894)	Ohio
Tulane University of Louisiana School of Medicine	.....	(1925)	Tennessee
Johns Hopkins University School of Medicine	.....	(1933)	N. B. M. Ex.
University of Maryland School of Medicine and College of Physicians and Surgeons	.....	(1934)	Maryland
Harvard University Medical School	.....	(1931), (1935)	N. B. M. Ex.
Tufts College Medical School	.....	(1934)	Connecticut
Univ. of Michigan Department of Medicine and Surg.	.....	(1913)	Michigan
University of Minnesota Medical School	.....	(1921)	Minnesota
Washington University School of Medicine	.....	(1935)	Michigan
Cornell University Medical College	.....	(1928)	New York
New York University, University and Bellevue Hospital Medical College	.....	(1928)	(1934) New York
New York University College of Medicine	.....	(1937)	New York
Duke University School of Medicine	.....	(1935)	W. Virginia
(1935, 3), (1936) N. B. M. Ex.	.....		
University of Cincinnati College of Medicine	.....	(1933), (1937)	Ohio
University of Pennsylvania School of Medicine	.....	(1933)	N. B. M. Ex.
University of Pittsburgh School of Medicine	.....	(1936)	Penna.
Medical College of the State of South Carolina	.....	(1935), (1936, 2), (1937, 2)	South Carolina
Meharry Medical College	.....	(1933), (1934)	Tennessee
University of Nashville Medical Department	.....	(1908)	Tennessee
University of Tennessee College of Medicine	.....	(1935), (1936)	Tennessee
Med. College of Virginia	.....	(1931), (1932), (1933, 2), (1937, 2)	Virginia
University of Virginia Department of Medicine	.....	(1932), (1933, 2), (1935, 2), (1936)	Virginia
Queen's University Faculty of Medicine	.....	(1931)	New York

## Book Notices

*Handbook of Hematology*. Edited by Hal Downey, University of Minnesota Medical School, Minneapolis. In four volumes. Cloth. Price, \$85 per set. Pp. 698; 699-1585; 1587-2360; 2362-3136, with 1,448 illustrations, including 50 colored plates. New York: Paul B. Hoeber, Inc., 1938.

The most monumental contribution on hematology assembled in English or in any other language has been made available by Hal Downey with the aid of an inspired publisher—the late Paul B. Hoeber. The position of hematology in modern medical practice is obviously paramount. The blood is the most important of all the tissues in the human body and is the very center of importance in relation to all manifestations of health and of disease.

In the development of the volumes, almost forty collaborators have participated. They have been given carte blanche as to the space to be occupied and as to their opinions and theories. The handbook constitutes a digest of international literature supplemented by an extensive bibliography and is in every sense an epoch-making contribution in the field of medical literature. The four volumes discuss every phase of the anatomy, physiology and pathology of the blood as well as that of the associated tissues, such as the bone marrow and the spleen, which are concerned in blood formation and blood destruction. Each of the important and well classified diseases of the blood is given special consideration and the other sections are devoted to the effects on the blood of diseases which are not primarily diseases of the blood and the blood-forming organs. There are hundreds of illustrations both in black and white and in colors.

The first section, by Raphael Isaacs, is concerned with the development, morphology, number, composition, measurement, and physical and chemical properties of the red blood cells. The second section gives a similar consideration to the leukocytes. The third section takes up the eosinophils. The fourth section considers the mast cells; the fifth section, the lymphocytes and monocytes. Then comes a consideration by Bunting of the functions of the leukocytes and a study of the blood platelets by Rosenthal, who also considered the hemorrhagic diatheses. The remainder of this volume is devoted to the supravital staining methods.

The second volume opens with a magnificent study of comparative hematology by H. E. Jordan and embryology by William Bloom. Next comes a consideration of the normal blood in infants and children and of the reticulo-endothelial system. This chapter, by the late Robert H. Jaffé, may also be listed among the classics in American medicine. Few hematologists have attained the distinction attained by Jaffé not only for fundamental knowledge but also for the ability to present information in a systematic, understandable form. The section on the reticulo-endothelial system would be well worthy of reprint as a special monograph. Dr. Downey himself discusses monocytic leukemia. Much of the remainder of the second volume is contributed by William Bloom, who discusses tissue cultures of the blood, the lymphatic tissues and the lymphatic organs. This section is supplemented by some of the finest colored illustrations that have been made available in any work on hematology.

The third volume is devoted largely to the spleen and the bone marrow, to changes that take place in these tissues, and to a consideration of the various anemias. The writers include Florence Sabin, Charles Doan, Cyrus Sturgis and Verne Mason among others. Here also the considerations and the illustrations are of the highest order.

The fourth volume is devoted to polycythemia, hemoglobin, metabolism, infectious diseases, sarcomas of the blood and many other subjects, and also provides an extensive detailed index.

The entire series of books is printed on a fine quality of enameled paper suitable to the quality of the illustrations. Obviously here is fundamental material which should be in the possession of every medical library and every medical school because it is the very foundation on which a great new specialty in medicine is developing. The editor, publisher and collaborators in this great new medical work deserve the commendation of the medical profession.

*Die Methoden der experimentellen Chemotherapie.* Von Prof. Dr. Claus Schilling, Abteilungsdirektor am Institut Robert Koch I. R. Paper. Price, 4.50 marks. Pp. 104, with 18 illustrations. Jena: Gustav Fischer, 1938.

This is a practical manual of selected methods such as might be used in organizing a chemotherapeutic institute or in a course on chemotherapeutic experiments on animals. Methods of the greatest importance in producing infections are given in detail, those little used being merely referred to; choice of chemical compounds is limited to the well tried and tested, derivatives being dealt with briefly.

The supreme law of chemotherapy, according to the author, is that the drug must not injure the host. For this reason, every therapeutic experiment must be preceded by a pharmacologic experiment which determines the minimum fatal dose and the highest tolerated dose of a drug. The aim of chemotherapy is to destroy the parasites in the host or at least to injure them so that they may be rendered harmless by the natural processes of the host. He warns that few infectious diseases in man run the same course in animals. But chemotherapeutic agents are not to be used on sick human beings until they are extensively tested on animals. Similar, though not identical, infections in animals may serve as models, experimental leprosy for instance, and yield important information.

The distribution and localization of infections must be considered by the chemotherapist. Although chemotherapeutic action is generally intended to be direct on the parasite, many beneficial effects are produced indirectly. Therefore the complete chemotherapeutic trial includes tests on the parasite *in vitro* and *in vivo*. The solvent or medium in which a chemotherapeutic agent is dissolved or suspended is important for the success of a test; for instance, viruses and bacteria are not injured in warm physiologic solution of sodium chloride but spirochetes and protozoa are decidedly. For the host, the medium must be indifferent. It is material to chemotherapeutic action whether the agent is injected in a true or colloid solution or is itself a crystalloid or colloid. With all such details attended to, it would seem that the chemotherapeutic experiments outlined in this book should succeed every time.

The following experimental infections with chemotherapeutic treatment are presented in the first nine chapters: bacteria, spirochetes, protozoa, helminths, rickettsia, bartonella, viruses and tumors. The last three chapters present experiments on chemotherapeutic agents, i. e. theories of action, special actions and detection in body fluids of certain agents (mercury, germanin, atabrine, arsenic, atoxyl, gold, quinine and plasmochin). The illustrations consist of simple line drawings and are used to clarify characteristic features of a piece of equipment, an organismal cycle, a pose of a mosquito or an anatomic lesion. Structural formulas and doses for different species of chemotherapeutic agents are given throughout, and at the end of the book there are separate indexes of literature and of subject matter. Altogether this is a most practical and handy book for all medical research institutes and laboratories of pharmacology, pathology and bacteriology.

*Civilization and Disease.* By C. P. Donlison, M.D., M.R.C.P. With an Introduction by Sir Walter Langdon-Brown, M.A., M.D., Hon. D.Sc. Cloth. Price, \$3. Pp. 222. Baltimore: William Wood & Company, 1938.

Psychoanalysis has been a stimulus to the medical investigator to compare the behavior, habits, practices and diseases of the primitive tribes in various parts of the world with the same traits and customs in the form in which they are exhibited in civilized life, from the jumping off point of analysis of mental mechanisms producing the neuroses. Since Margaret Mead and Malinowski have made studies of South Sea Island tribes with particular reference to their sexual behavior, which in turn is considered significant in giving rise to neurotic conditions, the subject is not new. The present writer has gone further. To a medical officer from primitive backwaters, the fact was stressed on his return to England that the diseases which he had observed among natives were dissimilar to those which were common in Britain. Carefully making an analysis of the proportion of various types of conditions observed under civilized modes of living and those seen in various primitive environments, he produced the present interesting and rather stimulating book. He is handicapped in comparing the diseases

observed in civilization and outside it by the fact that many diseases diagnosed in natives have an atypical form. Then too it is difficult to get the cooperation of primitive persons to permit a careful examination and this, it appears, is particularly true with regard to neurosis and psychosis. Nevertheless it seems to have been possible to make a tentative study which is of some value. The author himself admits that figures, particularly those in the noncivilized group, are not forthcoming which will bear a comparison with the carefully kept statistics of Europe. Nevertheless there are some conditions which are almost never found among primitive people, for instance exophthalmic goiter. The author does point out that carcinoma is possibly more rare among the primitive people because of the fact that owing to other causes they seldom reach the age of susceptibility. Donlison goes into some discussion of particular diseases which are less frequent among primitive people and points out their etiologic background. He emphasizes a number of traits which are not particularly of cultural origin or necessarily due to civilization *per se*. On the other hand, dietary habits plus the strain of life under civilized conditions do, it appears to him, form an etiologic background for the higher incidence among the civilized of certain disorders. There is a good deal of discussion of the philosophic background of the anthropologic, ethnologic and perhaps the sociologic mechanisms which cause a difference between civilized and noncivilized groups. It will probably be the source of stimulation for other serious students of public health and for psychiatrists to make more valid comparisons. The volume is not particularly deep, nor does it show great conversance with either psychiatry or sociology. There are some parts which are redundant and somewhat out of place and this is particularly true of the author's rather extensive discussion of the various theories of neurosis. It must be admitted, however, that the book is well written and is interesting. While much of it may be considered controversial, it has a definite place in evaluating that borderline which lies between medicine and ethnology.

*Progressive Relaxation: A Physiological and Clinical Investigation of Muscular States and Their Significance in Psychology and Medical Practice.* By Edmund Jacobson, A.M., Ph.D., M.D., Laboratory for Clinical Physiology, Chicago. Second edition. Cloth. Price, \$5. Pp. 404, with 89 illustrations. Chicago: University of Chicago Press, 1938.

In 1929, when the first edition of this book appeared, the potential value of the special relaxing procedure was recognized in the pages of *THE JOURNAL*. Jacobson's method of treating the emotionally maladjusted has now become fairly generally known among psychiatrists and neurologists even if it does not have quite the recognition that some of the other forms of psychotherapy have. Strictly speaking, perhaps, Jacobson's method of progressive relaxation is not a psychotherapeutic method but rather a technic of treatment which attempts to get at disease states through adjustment of the individual's neuromuscular mechanisms rather than his thinking processes. After considerable research in the field of physiology and a good deal of reading on the subject of relaxation and neuromuscular mechanisms, in 1929 Jacobson came out with this theory, which at that time was quite novel; namely, that with complete relaxation came the opportunity for the individual with disturbed kinetic function to reach an equilibrium, at least a state of rest, which would permit nature to aid him in returning to a healthy state. Jacobson emphasizes the distinction which he draws between the advice that is usually given to the patient "to relax" and the systematic procedure of guidance which enables the patient to learn for himself through subjective sensation what real relaxation is, contrasted to what the patient thinks is a state of rest, which really contains a number of active components. Jacobson makes no attempt to limit this treatment to the anxiety neuroses and those conditions which frankly are accompanied by what might be called nervous tension. As a matter of fact, he gives some statistics in the present volume which indicate that cardiovascular states and other similar disturbances of the organism which are considered definitely organic in nature can be improved by this method. The first part of the book is devoted primarily to the scientific thought behind the method, and the experiments which have been done by the author and

other students of the subject indicate that progressive relaxation might be a therapeutic medium. Accompanying this considerable space is devoted to actual procedure of administering progressive relaxation. Although the author admits that the procedure is time consuming, it does not compare (when one analyzes the amount of time that must be given to teaching the patient how to relax properly) to the conventional psychotherapeutic measures, some of which go on interminably. The middle of the book—and this part constitutes about half of its total content—is devoted to an analysis of the physiologic components of progressive relaxation. The effect of relaxation on the knee jerk, for instance, is discussed in considerable detail. In the present edition the author has added a great deal of material dealing with the measurement of relaxation and tension of muscles by means of electrical measuring devices. The detail into which he goes here is almost overwhelming. The whole procedure of relaxation becomes almost a quantitative study. The terminal chapters deal with the use of this technic with particular reference to various disorders, traumatic and psychogenic. There is some indication of the fact that in the period of almost ten years during which the author has been following this procedure it has proved itself to have considerable value in his hands. Its use by others than the author has not been particularly convincing. Nevertheless it is a procedure which should be carefully studied and analyzed and tried by the neurologist and psychiatrist, and perhaps by the self-critical physician who is aware of neuromuscular disturbances in the organic state. There is an excellent bibliography. The style is good. The book is well written and, while the reasoning may not entirely be agreed with, the presentation shows a distinct effort to emphasize the truly scientific side of the author's work on the subject.

**Tissue Reactions in Bone and Dentine: A Morpho-Biological Study of the Formation and the Dissolving of Bone and Dentine.** By Ake Wilton, M.D., Asst. Professor and Lecturer in Pathology at the Caroline Institute, Stockholm. Paper. Price, 15s. Pp. 194, with 64 illustrations. London: Henry Kimpton, 1937.

This monograph is devoted to the exposition of the hypothesis that bone and dentin changes in such diseases as rickets, achondroplasia, scurvy, experimental hyperparathyroidism, Paget's disease and osteogenesis imperfecta are markedly influenced by two factors. One of these operates on rapidly growing normal tissues particularly during the developmental stage, when proliferation is greatest, tending to arrest growth and retard orderly development (differentiation) of embryonic types of cells from youthful forms to mature ones. The other acts on fully grown, working cells in which proliferation has ceased causing a dedifferentiation of them to less mature forms (metaplasia) and followed by proliferation. It is asserted that the changes in rickets and achondroplasia are typical of the first type of change, osteogenesis imperfecta and scurvy of the second. It is apparent that the author's point of view has been greatly influenced by the work of Häggqvist and his theory of bone calcification and decalcification. The exposition is not clear enough to satisfy the needs of a person unfamiliar with research in this field, and the content hardly justifies careful study by those familiar with current investigation of the problems discussed. The translation is not wholly satisfactory.

**The Relationship Between Characteristics of Personality and Physique in Adolescents.** By P. S. de Q. Cabot, the Psychological Laboratory, Harvard University, Cambridge, Massachusetts. Genetic Psychology Monographs, 1938, Vol. XX, No. 1. Paper. Pp. 120, with 3 illustrations. Provincetown, Massachusetts: Journal Press, 1938.

The author of this little monograph points out that since the time of Hippocrates there has been a series of attempts made to point out differences in personality in relation to actual physical structure. The purpose of the present study was to see whether any particular psychologic traits were associated with specific body build. The monograph begins with a summary of the literature on the subject, and the author draws the conclusion that the information is incomplete and the statistics are poorly collected, and he comes to the conclusion that most of the observers have found relationship of mind capacity to body structure but that their conclusions are drawn from insufficient data. The study reported in the present monograph comprised sixty-two cases classified as pykno-somes,

leptosomes and athletosomes. The cases were rated by at least four teachers for each student. A classification sheet was made listing the various traits emphasized by Kretschmer, a list comprising thirty-nine questions was used to analyze each case, and a trait study was made. Other information such as physical condition and intelligence quotient was also collected. The author formulates a hypothesis of sociobiologic advantage to determine whether any particular physical build was superior to another. In general the pyknic type were found to have the most satisfactory traits for a social adjustment. This is a carefully worked out study containing thirty-six tables, the data which are contained therein being treated by psychologic statistical methods, with the drawing of fairly valid conclusions. It is an interesting study from the standpoint of emphasizing the need for caution in using body-build types to represent mental types, although there probably is some relationship.

**Arthritis, Fibrositis and Gout: A Handbook for the General Practitioner.** By Charles W. Buckley, M.D., F.R.C.P., Physician to the Devonshire Royal Hospital for Rheumatic Diseases, Buxton. Cloth. Price, 7s. 6d. Pp. 153, with 24 illustrations. London: H. K. Lewis & Co., Ltd., 1938.

The author of this little book has collected and revised a group of postgraduate lectures aimed to give the essential clinical features of those disorders commonly grouped together as chronic rheumatism and to outline methods of treatment which he has found useful. The result is a book of seventeen chapters in which are discussed briefly the classification, theories of etiology, clinical features and treatment of rheumatoid arthritis, chronic villous arthritis, osteo-arthritis, spondylitis, fibrositis and gout. The author makes no claim toward thoroughness of discussion and cites the literature only occasionally. A short bibliography, however, is given at the end. Many useful hints for treatment are included and some suggestions are made which have not yet been generally accepted.

**Neuro-Ophthalmology.** By R. Lindsay Rea, B.Sc., M.D., M.Ch., Ophthalmic Surgeon to West End Hospital for Nervous Diseases, London. Cloth. Price, \$9. Pp. 568, with 161 illustrations. St. Louis: C. V. Mosby Company, 1938.

As the author points out, there is developing a close relationship between ophthalmology and neurology. Conditions revealed by examination of the nerves supplying the eye often are extremely significant in making a diagnosis of systemic disease or localized disease of the central nervous system. Since the appearance many years ago of "The Eye and Nervous System" by Posey and Spiller, no volume has specifically presented the facts needed by the neurologist so that he might more fully understand ophthalmic symptoms. It has been necessary for him to wade through textbooks on ophthalmology to find symptoms related to nervous system disease, yet even here discussions were sketchy as were those on the same subject in a neurologic book. Rea has to some extent overcome this problem. The whole of the volume is devoted to an analysis of diseases of the nervous system as manifested by ocular and extra-ocular symptoms pertaining to the visual mechanism. Discussions of neurologic symptoms manifested through the eye are relatively complete, but the parts of the book devoted to the influence of certain diseases of the nervous system on the eye are not quite as satisfactory. It is true that in his introduction the author expresses a desire to limit the size of this volume and perhaps it is justifiable to contract individual discussions of the ophthalmic conditions found in various nervous diseases, or as a result of various types of poisoning, on the basis that a thorough study of the chapters dealing with the symptoms found in the retina or in the extrinsic muscles of the eye will reveal what nervous diseases should accompany them. There is no particular novelty about the illustrations, but there are several color plates which show fundus conditions and there are a number of drawings giving perimetric results or showing pathologic conditions of one sort or another. Neuropathology is not stressed, nor is the branch of neuro-ophthalmology which is so important in this country, the medicolegal aspect of blindness, particularly that due to industrial conditions or to malingering, given any particular thought. The fact that neuro-ophthalmic symptoms and diseases having neuro-ophthalmic symptoms are discussed in one volume without particular classification makes the book a little



bit unsystematic. Some chapters are devoted to symptoms alone, such as papilledema and optic atrophy. Others are devoted to diseases alone such as the chapters on abnormality, tumors and the poisons which affect vision. Because of the fact that the book is not broken into parts dealing with these two points of view, it may be necessary for a person interested in the subject to acquaint himself thoroughly with the contents of the volume rather than using it as a reference work. There is an excellent and extensive bibliography which in itself makes the volume a desirable adjunct to the library of the neurologist; and, of course, since it is unique and carefully composed, its value to any practitioner who is interested in neuro-ophthalmology cannot be gainsaid.

*Clinical Chemistry in Practical Medicine* By C. P. Stewart, M.Sc. Ph.D., Senior Biochemist, Royal Infirmary, Edinburgh, and D. M. Dunlop, B.A., M.D., F.R.C.P.E., Christison Professor of Therapeutics and Clinical Medicine, University of Edinburgh. Second edition. Cloth. Price, \$4. Pp. 372, with 38 illustrations. Baltimore: William Wood & Company, 1937.

This edition is thoroughly revised. The book has been written especially for the man in practice and its usefulness is virtually limited to that group. The authors are practical and conservative in the presentation. They have not attempted a complete discussion of the entire field of applied biochemistry but have limited themselves to the commoner and more generally useful tests. The text covers the subjects of collection and preservation of samples of blood, urine, feces and spinal fluid; basal metabolism; mechanism of neutrality regulation; glycosuria; albuminuria and tests of renal function; analysis of gastric contents; tests of hepatic function and of the cerebrospinal fluid; chemical tests in pregnancy; blood calcium and phosphorus, and the blood sedimentation rate. Technical methods are given in an appendix instead of the text. All the discussions are concise and clearly presented from the point of view of medical practice.

*Cases of Attempted Suicide in a General Hospital: A Problem in Social and Psychologic Medicine: A Report on a Local Condition, including a Survey of 1,147 Records of Attempted Suicide Cases Admitted to the Boston City Hospital.* By Merrill Moore, M.D., Assistant Visiting Neurologist, Boston City Hospital. Reprinted from the *New England Journal of Medicine*, Volume CCXVII, Number 8, Pp. 291-303, August 19, 1937. Paper. Pp. 64. Boston: The Author, 1937.

This short report is an extremely interesting one and would well bear perusal by those who have to do with the operation of general hospitals and by psychiatrists. The author has recognized the fact that the increasing number of cases of attempted suicide brought into the Boston City Hospital is well worthy of study. His investigation is not particularly deep—actual mechanisms of suicide or attempted suicide are not analyzed in terms of deep psychiatry, psychoanalysis or even complicated statistical methods, but quite a number of traits are tabulated, charted, and briefly discussed in a competent fashion. Some of these traits are the age distribution, superficial motives such as economic, domestic, health and love problems, method of attempt, frequency of poisons taken by mouth, and other features which are equally interesting and significant. The author, on the basis of the observations, proposes that a large general hospital with "special protective wards" be established where each patient may be given psychiatric care and treatment. The volume is concluded with twenty-eight numbered paragraphs giving a summary of results and recommendations. There is appended to it a good bibliography.

*Methods of Tissue Culture.* By Raymond C. Parker, Ph.D., Associate in Experimental Surgery, The Rockefeller Institute for Medical Research, New York. With a foreword by Alexis Carrel, M.D. Cloth. Price, \$5. Pp. 292, with 109 illustrations. New York: Paul B. Hoeber, Inc., 1938.

The preface to Dr. Parker's book expresses conservatively the fact that methods of tissue culture have been well standardized and brought down to date in Dr. Carrel's laboratory in the Rockefeller Institute for Medical Research. These methods may be applied in "five major fields of investigation, namely experimental morphology and the study of tumors, viruses, hypersensitivity and immunity." The introduction by Dr. Carrel is an excellent review of the facts pertaining to the origin, purposes, difficulties and possibilities of this method of research as one of the aids in transforming a dry, dead

morphologic concept of life into one dominated by biologic and physical reactions. It is quite evident in Dr. Carrel's review that fresh tissue culture, as a method of study, is still in experimental stages, requiring refinement of technic, carefulness of controlled observation and conservatism in interpretation and clinical application. The body of the book is particularly devoted to methods and apparatus which should be of great value to those interested in repeating experiments and attempting to solve new problems involving cellular growth in all its phases. This book, although small, contains illustrations of instruments, apparatus and photomicrographs which will help greatly the beginner in his work on the culture of both normal and abnormal tissues. There are also 753 bibliographic references, beginning with the first publication of Harrison (1906-1907) to the most recent contributions of 1937.

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Malpractice: Right of Surgeon to Discontinue Operation on Encountering Unexpected Risk.**—The plaintiff had been afflicted since she was 3 years old "with serious trouble of the head, nose and throat, at times threatening to involve her lungs." In 1929, when she was 9, her family physician referred her to the defendant, who after diagnosing her ailment as an infected left antrum stated that it would be necessary to "make a hole in the mouth and cut away and remove the diseased tissue" and to administer five or six bronchoscopy treatments subsequently "to clear up the chest." The child's mother, however, in the hope that a change of climate might render such treatment unnecessary, postponed the operation, but no relief followed. In May 1931 the defendant was asked to operate, but because of the condition of the child's chest he did not do so until June 22, 1931. Prior to the operation the mother instructed the defendant "to act on his own best judgment" and gave written consent to the operation. After the operation had been proceeding some twenty-five minutes under an anesthetic, the physician "recognized a condition as 'quite dangerous'; in fact she had a crisis of pneumonia." He "deemed it inadvisable to continue with the operation" and made "no attempt to remove the membrane." The child remained in the hospital five days. Then she was taken home and treated by the defendant from time to time. She was given many bronchoscopy treatments until 1933. The mother then dismissed the defendant and employed other physicians. In 1937 the child, by her father as her next friend, brought suit against the defendant for failing to operate as he had contracted to do. The trial court nonsuited the case on the ground, among others, that there was no proof of a breach of the contract by the defendant. The plaintiff appealed to the supreme court of New Jersey.

Looking at the evidence, said the supreme court, there is no doubt that a radical operation on the left antrum was to be performed. That such an operation was performed by the defendant was proved without substantial dispute. The plaintiff contended, however, that the operation agreed on was not completed because the defendant, without right and illegally, refused or neglected to continue it by the removal of the diseased tissue. That contention, in the opinion of the court, was unsound. The undisputed testimony showed that the defendant, in discontinuing the operation, was within his rights and performed his duty to his patient, since he found in the course of the operation that to continue it would endanger her life. Where, as here, the duly authorized representative of an infant patient has selected a physician to perform an operation under anesthesia and has appointed no other person to represent her during the period of unconsciousness, the law will by implication constitute the physician the representative of his patient and will cast on him the responsibility of so acting in her interest that she will receive the full benefit of

his professional judgment and skill to which she is entitled. This implication, which protects the physician while acting within its scope, places no duty on him to perform an operation that involves risks or results of a kind not contemplated. As was said in *Bennan v. Parsonnet*, 83 N. J. L. 20, 83 A. 948:

The question, however, is one to be settled, not by authority, but by reason, and its importance is such that it touches at a vital point the interests of the entire public, any member of which may at any time suffer in life or health by the establishment of a rule that will paralyze the judgment of the surgeon and require him to withhold his skill and wisdom at the very juncture when they are most needed, and when, could the patient have been consulted, he would manifestly have insisted upon their being exercised in his behalf.

Here, continued the supreme court, according to the undisputed proof, the physician was quoted as saying "I started to operate, and there was a condition there which I recognized as quite dangerous. She had a crisis of pneumonia . . . and I deemed it inadvisable to continue with the operation."

The plaintiff next contended that the evidence respecting the contract of the physician presented a question the jury should have determined as to the terms of the engagement. We think not, said the supreme court. There was no ambiguity in its terms, and the interpretation of such a contract is a question of law for the trial judge and should not be left to the jury.

After discontinuing the operation, the plaintiff further contended, the physician was under an obligation to continue it at some future time, both with respect to the removal of the diseased tissue and with respect to the bronchoscopic treatments to clear up the chest. But, said the court, that contention ignores the undisputed facts. The proofs show that the defendant properly continued from time to time to treat the child in both respects for a considerable period, until the child was removed from his supervision and treatment by the mother, who engaged other physicians to continue such treatment. That this action of the mother was against the wishes of the defendant was disclosed by the proof that the defendant reported to the mother, saying "I would still like to go on with the work; the work still remains; the left antrum is still infected. I will continue with the operation," and added, "Since that time the other side has been infected, that is, the right antrum." The rule is, said the court, that whenever, as here, one party to a contract prevents the other from carrying out the terms thereof, the other party may treat the contract as broken and abandon it. Such an abandonment is merely the acceptance of a situation created by the wrongdoer.

For the reasons stated, the supreme court affirmed the judgment in favor of the defendant.—*Hanig v. Orton* (N. J.), 195 A. 812.

**Partnerships: Agreement in Restraint of Professional Practice Enforceable.**—The plaintiff physicians, as partners, operated a clinic and entered into a contract of employment with the defendant physician, for the period of one year, in which the defendant agreed that he would not engage in the practice of medicine in the community for ten years from the date of the expiration of the contract without the consent of the clinic group. At the termination of an extended period of the contract, the defendant apparently commenced the private practice of medicine in the city, outside the clinic, and the plaintiffs sought to enjoin that practice. The trial court granted the desired relief and the defendant appealed to the Supreme Court of Iowa.

The privilege of a duly licensed physician, said the Supreme Court, to practice when and where he may wish is a right which the courts will zealously protect. The privilege is one, however, which by valid, voluntary contract, a physician may restrict, provided such contractual restrictions are reasonable and not contrary to public policy. In holding that the restrictions in the present case were reasonable and not contrary to public policy, the court quoted, with approval, from 6 *Ruling Case Law* 805, as follows:

If the restrictions are not otherwise contrary to public policy, they must be held to be valid when they appear to be reasonably necessary for the fair protection of the employer's business or rights, and do not unreasonably restrict the rights of the employee, due regard being had to the subject-matter of the contract, and the circumstances and conditions

under which it is to be performed. This rule seems to be especially applicable to agreements by assistants to professional men. Such agreements enable the employer to instruct his assistant without fear of afterwards having a rival. Few professional men would take assistants and intrust them with their business, impart to them their knowledge and skill, bring them in contact with their clients and patients, unless they were assured that the knowledge and skill imparted and the friendships and associations formed would not be used, when the services were ended, to appropriate the very business such assistants were employed to maintain and enlarge.

The defendant further contended that the original partnership that negotiated the contract with him was dissolved by operation of law by the retirement of one of the partners and that when a new partner was taken in this in effect resulted in the formation of a new partnership which was not a party to the original contract and therefore was not entitled to maintain any action for the enforcements of the restriction contained in it. Without going into the matter of whether this contention would have been sound if timely made, the court said, it is sufficient to say that the defendant was not in a position to raise it after having operated under the new partnership the full time of the written contract and the extended period thereof. No contention of this sort was then suggested by the defendant and he continued his work and accepted pay according to the understanding of the parties. It was too late for the defendant to raise it after he had terminated his services.

The Supreme Court having found no error in the decree of the trial court, its action granting the injunction was affirmed.—*Larsen v. Burroughs* (Iowa), 277 N. W. 463.

## Society Proceedings

### COMING MEETINGS

- Academy of Physical Medicine, Washington, D. C., Oct. 24-26. Dr. Herman A. Osgood, 144 Commonwealth Ave., Boston, Secretary.
- American Academy of Ophthalmology and Oto-Laryngology, Washington, D. C., Oct. 9-14. Dr. William P. Wherry, 107 South 17th St., Omaha, Executive Secretary.
- American Association of Obstetricians, Gynecologists and Abdominal Surgeons, White Sulphur Springs, W. Va., Sept. 22-24. Dr. James R. Bloss, 418 Eleventh St., Huntington, W. Va., Secretary.
- American Association of Railway Surgeons, Chicago, Sept. 19-21. Dr. Daniel B. Moss, 547 W. Jackson Blvd., Chicago, Secretary.
- American College of Surgeons, New York, Oct. 17-21. Dr. George W. Crile, 40 East Erie Street, Chicago, Chairman, Board of Regents.
- American Hospital Association, Dallas, Texas, Sept. 26-30. Dr. Bert W. Caldwell, 18 East Division St., Chicago, Executive Secretary.
- American Public Health Association, Kansas City, Mo., Oct. 25-28. Dr. Reginald M. Atwater, 50 West 50th St., New York, Executive Secretary.
- American Roentgen Ray Society, Atlantic City, N. J., Sept. 20-23. Dr. Carleton B. Peirce, University Hospital, Ann Arbor, Mich., Secretary.
- Associated Anesthetists of the United States and Canada, New York, Oct. 17-21. Dr. F. H. McMechan, 318 Hotel Westlake, Rocky River, Ohio, Secretary General.
- Association of Military Surgeons of the United States, Rochester, Minn., Oct. 13-15. Dr. H. L. Gulchrest, Army Medical Museum, Washington, D. C., Secretary.
- Central Association of Obstetricians and Gynecologists, Minneapolis, Oct. 6-8. Dr. William F. Mengert, University Hospitals, Iowa City, Secretary.
- Central Society for Clinical Research, Chicago, Nov. 4-5. Dr. Lawrence D. Thompson, 4932 Maryland Ave., St. Louis, Secretary.
- Clinical Orthopedic Society, Nashville, Tenn., and Birmingham, Ala., Oct. 7-8. Dr. H. Earle Conwell, 215 Medical Arts Bldg., Birmingham, Ala., Secretary.
- Delaware, Medical Society of, Dover, Oct. 10-12. Dr. Allan V. Gilliland, Smyrna, Secretary.
- Indiana State Medical Association, Indianapolis, Oct. 4-6. Mr. Thomas A. Hendricks, 23 East Ohio St., Indianapolis, Executive Secretary.
- Inter-State Postgraduate Medical Association of North America, Philadelphia, Oct. 31-Nov. 4. Dr. W. B. Peck, 27 East Stephenson St., Freeport, Ill., Managing Director.
- Kentucky State Medical Association, Louisville, Oct. 3-6. Dr. Arthur T. McCormack, 620 South Third St., Louisville, Secretary.
- Michigan State Medical Society, Detroit, Sept. 19-22. Dr. L. Fernald Foster, 311 Center Ave., Bay City, Secretary.
- Mississippi Valley Medical Society, Hannibal, Mo., Sept. 28-30. Dr. Harold Swanberg, 510 Main St., Quincy, Ill., Secretary.
- Nevada State Medical Association, Reno, Sept. 23-24. Dr. Horace J. Brown, 120 N. Virginia St., Reno, Secretary.
- Omaha Mid-West Clinical Society, Omaha, Oct. 24-28. Dr. J. D. McCarthy, 107 South 17th St., Omaha, Secretary.
- Pacific Association of Railway Surgeons, Los Angeles, Oct. 7-8. Dr. W. T. Cummins, Southern Pacific General Hospital, San Francisco, Secretary.
- Pennsylvania, Medical Society of the State of, Scranton, Oct. 3-6. Dr. Walter F. Donaldson, 500 Penn Ave., Pittsburgh, Secretary.
- Southwestern Medical Association, El Paso, Texas, Nov. 3-5. Dr. Orville E. Egbert, 116 Mills St., El Paso, Texas, Secretary.
- Vermont State Medical Society, Burlington, Oct. 6-7. Dr. B. F. Cook, 154 Bellevue Ave., Rutland, Secretary.
- Virginia, Medical Society of, Danville, Oct. 4-6. Miss Agnes V. Edwards, 1200 East Clay St., Richmond, Secretary.

## Current Medical Literature

## AMERICAN

The Association Library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1928 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

## American Journal of Hygiene, Baltimore

28: 1-148 (July) 1938

- Some Biochemical Properties of *Corynebacterium Diphtheriae*. M. Frobisher Jr., Baltimore.—p. 1.
- Types of *Corynebacterium Diphtheriae* in Baltimore, Md. M. Frobisher Jr., Baltimore.—p. 13.
- \*Association of *Trichomonas Vaginalis*, Vaginitis and Leukorrhea. J. Andrews, Baltimore.—p. 36.
- Trichomonas Foetus* in Bulls. J. Andrews and F. W. Miller, Baltimore.—p. 40.
- Further Experiments on Passive Immunity of Rats to *Nippostrongylus* Infections. A. C. Chandler, Houston, Texas.—p. 51.
- Immunology of Epidemic Influenza. T. Francis Jr., New York.—p. 63.
- Glycogen Content of Flagellate of Cattle, *Trichomonas Foetus*. Helen M. Stewart, Baltimore.—p. 80.
- Experimental Studies on Course of *Trichina* Infection in Guinea Pigs: I. Minimal Dose of *Trichina* Larvae Required to Produce Infestation of Muscles; with an Account of Potential Productiveness of the Female *Trichina*. H. Roth, Copenhagen, Denmark.—p. 85.
- Studies on Sodium Deficiency: Effects of Sodium Deprivation on Young Puppies. O. Turpeinen, Baltimore.—p. 104.
- Some Uses of the Chick Embryo for Study of Infection and Immunity. E. W. Goodpasture, Nashville, Tenn.—p. 111.
- Infection of Chorio-Allantois of Chick Embryo as Diagnostic Test for Variola. G. J. Buddingh, Nashville, Tenn.—p. 130.
- Quantitative Studies on Glucose Consumption by *Trichomonas Foetus*. J. Andrews and T. von Brand, Baltimore.—p. 138.

**Trichomonas Vaginalis, Vaginitis and Leukorrhea.**—Andrews made clinical and parasitologic observations on 239 antepartum patients to determine the incidence of *Trichomonas vaginalis* and local inflammatory symptoms in the vagina. Organisms were more prevalent in Negro women (50 per cent) than in white women (18 per cent) but the incidence of symptoms was virtually the same in the two groups. The coincidence of *Trichomonas vaginalis* and the symptoms (considered separately, collectively or in combination) was no greater than might be expected by chance alone in the group studied. Of all the assortments, the observed coincidence of trichomonads and vaginitis was least likely to be reproduced by chance alone. Further study involving enough cases to permit the separate consideration of the different types of vaginitis in both pregnant and nonpregnant women is necessary to secure statistical evidence on the existence of a significant relationship between the presence of trichomonads and the occurrence of vaginal symptomatology.

## American Journal of Pathology, Boston

14: 385-514 (July) 1938

- Implantation Carcinoma of Tubal Mucosa Secondary to Carcinoma of Ovary. J. A. Sampson, Albany, N. Y.—p. 385.
- Behavior of Murine and Human Leprosy in Foreign Hosts. A. W. Sellards and H. Pinkerton, Boston.—p. 421.
- Histologic and Cytologic Studies of Murine Leprosy. H. Pinkerton and A. W. Sellards, Boston.—p. 435.
- Morphologic Variations of Tumor Cells. O. Saphir, Chicago.—p. 443.
- The Matrix of Epithelial Cell Inclusion Body of Trachoma. P. Thygeson, New York.—p. 455.
- The Ability of Lymph to Maintain Viability in "Devascularized" Lymph Nodes. R. L. Holman, Chapel Hill, N. C., and E. B. Self, New York.—p. 463.
- \*Residual Infectivity of Primary Complex of Tuberculosis. W. H. Feldman and A. H. Bagenstoss, Rochester, Minn.—p. 473.
- Staining of Acid-Fast Bacilli in Paraffin Sections. G. L. Fite, Honolulu, Hawaii.—p. 491.
- Exstrophy of Bladder with Imperforate Anus, Absence of Greater Part of Small and Large Intestines, Continuity of Duodenum with Colon, Absence of Left Testis, Epididymis and Cord, and Enormous Hydro-Creter. J. McFarland, Philadelphia.—p. 509.

**Residual Infectivity of Primary Complex of Tuberculosis.**—Feldman and Bagenstoss utilized the material from sixty-eight human beings who had died by causes other than tuberculosis in an effort to determine the presence of virulent

tubercle bacilli in chronic tuberculous lesions of the lungs and contiguous lymph nodes. The lesions were emulsified and material from the respective subjects was used to inoculate culture mediums and to inject guinea pigs. Tissues from the lesions of the majority of the subjects were studied microscopically and evidence of activity was apparent in a considerable number. The results of the study show that: 1. The lesions of the primary complex of tuberculosis, when definitely encapsulated and sclerotic or caseous or caseocalcercous, seldom contained viable or virulent organisms. 2. The presence or absence of viable or virulent organisms of *Mycobacterium tuberculosis* in the lesions of the primary complex of tuberculosis cannot be established by morphologic appearances alone. 3. The data suggest that in adults endogenous reinfection is unlikely to occur from lesions of the primary complex. 4. The presence of silica in varying amounts is a fairly constant finding in lesions of the primary complex of tuberculosis. In the absence of demonstrable viable tubercle bacilli in the lesions it is suggested that histologic signs of activity are possibly due to silica.

## Am. J. Roentgenol. &amp; Rad. Therapy, Springfield, Ill.

40: 1-164 (July) 1938

- Peritendinitis Calcarea: Common Disease of Middle Life: Its Diagnosis, Pathology and Treatment. C. Sandström, Stockholm, Sweden.—p. 1.
- \*Nonputrid Pulmonary Suppuration. M. L. Sussman, New York.—p. 22.
- Roentgenologic Diagnosis of Placenta Praevia: Indirect Placentography. W. H. Ude, J. A. Urner and O. F. Robbins, Minneapolis.—p. 37.
- Klippel-Feil Syndrome with Unusual Clinical Manifestations. E. L. Turner, H. S. Shoulders and L. D. Scott, Nashville, Tenn.—p. 43.
- \*Carcinoma of Uterine Cervix: Survey of Treatment and Results in 1,491 Cases. H. H. Bowing and R. E. Fricke, Rochester, Minn.—p. 47.
- Clinical Observations in Use of Supervoltage Roentgen Rays Based on Six Years' Experience. A. Soiland, Los Angeles.—p. 52.
- Multiple Giant Calculi of the Prostate Gland: Report of Case. A. A. Creech and H. Silberman, Kecoughtan, Va.—p. 63.
- Large Intrathoracic Thyroid: Case Report. R. B. Miller, Hollywood, Calif.—p. 66.
- Measurement of Gamma Rays. W. Friedrich, Berlin, Germany.—p. 69.
- Ionization Measurement of Gamma Radiation. G. W. C. Kaye and W. Binks, Teddington, Middlesex, England.—p. 80.
- Some Problems of Gamma-Ray Measurement in Radiology. G. C. Laurence, Ottawa, Ont.—p. 92.
- Measurements of Radiation Energy and True Tissue Dosage (Energy Absorption) in High Voltage Therapy. L. Rovner, Chicago.—p. 104.
- Factors Influencing Quantitative Measurement of Roentgen-Ray Absorption of Tooth Slabs: IX. Tube-Machine Combination Factors. H. C. Hodge, G. Van Hynsen and S. L. Warren, Rochester, N. Y.—p. 108.

**Nonputrid Pulmonary Suppuration.**—Sussman reviews the roentgenologic features of the more severe forms of suppurative bronchopneumonia by means of illustrative cases. The report is intended to supplement that of Jachés made to the second international congress of radiology in Stockholm in 1928. Suppurative bronchopneumonia is to be differentiated from gangrenous bronchopneumonia, which is caused by putrefactive anaerobic organisms and which in its localized form represents the early stage of gangrenous putrid lung abscess and in its diffuse form is usually the result of a spread from a similar lesion. Suppurative bronchopneumonia may be caused by a variety of aerobic organisms including certain strains of pneumococci, streptococci, staphylococci and the Friedländer bacillus. The disease may possibly also be caused by certain anaerobic diphtheroids and streptococci. It occurs most often as a complication of purulent sinusitis, whooping cough, measles, influenza and grip, and after the aspiration of foreign bodies and secretions as in postoperative pneumonia. Suppurative bronchopneumonia is also the usual result of infection distal to any bronchial obstruction.

**Carcinoma of Uterine Cervix.**—Bowing and Fricke feel that the intensive broken-dose method of radium therapy, followed by a course of roentgen treatment, after thorough study and planning of each individual case, offers the best results in the treatment of carcinoma of the uterine cervix. In their series of 1,491 cases, extending over a period of fifteen years, although the great majority of patients (91 per cent) were in an advanced stage of the disease 26.8 per cent lived five or more years in apparently good health following treatment. The possibilities of this form of treatment for early and borderline lesions can be appreciated when it is noted that 69.2 per cent of the seventeen patients with lesions in stage I were well at the end of five

years, and 60.2 per cent of those (eighty-five) with borderline lesions were well at the end of five years. This form of treatment requires considerable individual care and cooperation between patient and physician. The fact that there is little risk to the treatment is attested by the fact that the hospital death rate for the entire series was only 1 per cent, the mortality occurring in the group with advanced lesions. There were no deaths during treatment in the early or borderline groups.

### American Journal of Surgery, New York

41: 187-368 (Aug.) 1938

- Tourniquet and Local Asphyxia. F. M. Allen, New York.—p. 192.  
Pathology and Therapy of the "Shoulder Joint Complex." E. Bettmann, New York.—p. 201.  
Syphilis Complicating Pregnancy. W. T. Daily, Brooklyn.—p. 213.  
Pelvic Tuberculosis: Review of Thirty-Six Cases. M. Glass and J. Cresci, Brooklyn.—p. 216.  
Experiences in Treatment of Certain Urinary Tract Malignancies with Supravoltage Roentgen Therapy. A. D. Munger, Lincoln, Neb.—p. 220.  
Thrombophlebitis of the Penis and Scrotum. M. R. Keen, Huntington, N. Y., and S. Shlimbaum, Bay Shore, N. Y.—p. 228.  
\*Value of Blood Diastase in Diagnosis of Common Duct Stone. C. D. Branch, Peoria, Ill., and R. Zollinger, Boston.—p. 233.  
Noncalculous Chronic Gallbladder Disease. M. J. Brown, Sayre, Pa.—p. 238.  
Drainage in Treatment of Perforated Appendicitis. F. G. Connell, Oshkosh, Wis.—p. 255.  
Gout in Surgical Practice. F. Glenn, New York.—p. 259.  
\*Comparative Study of Some Antiseptics and Germicides, with Special Reference to Alkyl-Dimethyl-Benzyl Ammonium Chlorides. C. G. Dunn, Cambridge, Mass.—p. 268.  
Head Injuries: Treatise from the Point of View of Diagnosis, Prognosis and Treatment. J. H. Watt, Little Neck, Long Island, N. Y.—p. 272.  
Neurogenic Sarcoma. H. Charache, Brooklyn.—p. 275.

#### Blood Diastase in Diagnosis of Common Duct Stone.

—Branch and Zollinger performed the blood diastase index in seventy-five cases of cholelithiasis in order to determine its value as an aid in the diagnosis of stone of the common duct. Twelve stones of the common duct were recovered at the time of operation. The elevation of the index was found of value provided the samples were obtained during or immediately after an attack of biliary colic as the result of a calculus in the common duct. In six of these twelve cases of stone of the common duct there was a definite rise in the blood diastase index, varying in amount from 300 to more than 1,000 mg. per hundred cubic centimeters. These patients were seen immediately after the onset of the attack. In the other six instances, however, a period of four days or more had elapsed and at that time the index was found to be within normal range. In the cases of cholelithiasis alone the index was found to be slightly elevated in ten cases. With one exception, this rise in the diastase was below 250 mg. However, in one case of cholelithiasis associated with acute cholecystitis there was an elevation of blood diastase to 600 mg. Whether a stone was present in this case but was not found at operation cannot be determined.

**Comparison of Antiseptics and Germicides.**—Dunn compared a few well known agents in respect to their germicidal action toward *Staphylococcus aureus*, Government 209, *Escherichia coli* and *Bacillus subtilis*. The antiseptics used were purchased in the open market except for the alkyl-dimethylbenzyl ammonium chlorides, which were obtained through the courtesy of a pharmaceutical company. As a germicide, alkyl-dimethylbenzyl ammonium chloride was considerably more effective toward *Staphylococcus aureus* at both 20 and 37 C. than the marketed products (tincture metaphen [1:200], tincture merthiolate [1:1,000], hexylresorcinol and pepsodent). In the presence of 50 per cent blood serum, the ammonium compound showed greater efficacy at 20 C. toward *Staphylococcus aureus* than any of the agents with which it was compared (bacili kil, hexylresorcinol, metaphen, merthiolate, pepsodent and zonite). At 37 C. and under similar conditions, the ammonium compound, bacili kil, metaphen and merthiolate were most effective. Tincture metaphen (1:200), alkyl-dimethylbenzyl ammonium chlorides and pepsodent were most efficacious toward *Escherichia coli* at 20 and 37 C. Metaphen was less active than the ammonium compound at 20 C. but was more active than this compound at 37 C. Spores of *Bacillus subtilis* were not destroyed as rapidly or in as high dilution as vegetative cells of bacteria.

Metaphen (1:200) and the ammonium compound (a 1:10 alkaline solution) were most active in destroying the spores. Phenol (1:20) and pepsodent did not destroy the spores in twenty-five hours.

### Annals of Internal Medicine, Lancaster, Pa.

12: 1-146 (July) 1938

- Some Experimental Observations Pertinent to Treatment of Hepatic Disease. J. L. Bollman, Rochester, Minn.—p. 1.  
Climate, Mode of Life and Heart Disease. P. D. White, Boston.—p. 6.  
\*Hyperparathyroidism Simulating or Associated with Paget's Disease, with Three Illustrative Cases. A. B. Gutman and W. B. Parsons, New York.—p. 13.  
The Oxygen Therapy of Pneumonia (Five Years' Experience at the U. S. Marine Hospital, Norfolk, Va.). G. H. Faget and W. B. Martin, Norfolk, Va.—p. 32.  
Secondary Amyloidosis: Results of Therapy with Desiccated Whole Liver Powder. H. G. Grayzel and M. Jacobi, Brooklyn.—p. 39.  
Relationship of Age to Concentration of Acid Soluble Phosphorus in Human Tissues. L. Pincussen, C. I. Reed and M. B. Visscher, Chicago.—p. 59.  
Infarction of the Heart: III. Clinical Course and Morphologic Findings. W. B. Bean, Boston.—p. 71.  
Present Status of Methods for Prophylaxis of Acute Anterior Poliomyelitis. J. A. Kolmer, Philadelphia.—p. 95.  
Study of Changes in Serum Cholesterol, Gastric Secretion and Carbohydrate Metabolism in Patients with Toxic Goiter. J. S. McElroy, Edith B. Schuman and J. O. Ritchey, Indianapolis.—p. 106.  
Trends in Public Health. T. Parran, Washington, D. C.—p. 115.

**Hyperparathyroidism and Paget's Disease.**—Gutman and Parsons made clinical, roentgenologic and biochemical studies on three patients with proved hyperparathyroidism presenting, in addition, certain aspects of Paget's disease (in one the sclerotic changes were in the skull, in one in the pelvis and in the other in the tibia and the skull). The coexistence of the two diseases in these instances would appear to be fortuitous. An alternative explanation has been offered by Albright, Aub and Bauer: If the unknown factor stimulating osteoclastic activity in Paget's disease is present in a patient in subthreshold degree, superimposed hyperparathyroidism, with its generalized stimulus to osteoclastic activity, may make the underlying disease become manifest. Whatever the explanation for these cases, the authors feel justified in concluding that they do not seriously jeopardize the prevailing view that hyperparathyroidism and Paget's disease are distinct and unrelated entities. They serve, however, to emphasize two practical points: 1. Cases of hyperparathyroidism may present isolated areas of bone sclerosis. 2. Appropriate chemical studies should be made even in cases of apparently obvious Paget's disease to exclude the possibility of hyperparathyroidism.

### Annals of Surgery, Philadelphia

108: 161-320 (Aug.) 1938

- \*Use of Heparin in Thrombosis. G. D. W. Murray and C. H. Best, Toronto.—p. 163.  
\*Study of Experimental and Clinical Shock, with Special Reference to Its Treatment by Intravenous Injection of Preserved Plasma. E. B. Mahoney, Cincinnati.—p. 178.  
Operative Treatment of Communicating Hydrocephalus. W. E. Dandy, Baltimore.—p. 194.  
\*Primary Malignancy of Jejunum and Ileum. A. L. Cameron, Minot, N. D.—p. 203.  
Surgical Aspects of Lesions of Meckel's Diverticulum. N. A. Womack and R. B. Siegert, St. Louis.—p. 221.  
Traumatic Rupture of Bile Ducts. K. M. Lewis, New York.—p. 237.  
Clinical Significance of Pancreatic Reflux. R. Colp and H. Doubilet, New York.—p. 243.  
Studies on Renal Hypertension: Effect of Deviating Urine into Blood Stream and Intestines of Dogs. W. A. Geer and L. R. Dragstedt, Chicago.—p. 263.  
Primary Carcinoma of Ureter. C. C. Higgins, Cleveland.—p. 271.  
Fate of Tendon, Fascia and Elastic Connective Tissue Transplanted into Bone. G. Kernwein, J. Fahey and M. Garrison, Chicago.—p. 285.  
Evaluation of Excision in Treatment of Ununited Fracture of Carpal Scaphoid (Navicular) Bone. A. J. Davidson and M. T. Horwitz, Philadelphia.—p. 291.  
Osseous System in Hodgkin's Disease. H. S. Abrams, Tuscaloosa, Ala.—p. 296.  
Sublingual Epidermoid Cysts. B. R. Shore, New York.—p. 305.  
Regeneration of Sensation in Transplanted Skin. H. R. McCarroll, St. Louis.—p. 309.

**Heparin in Thrombosis.**—After studying the effect of heparin in dogs in arterial anastomosis, venous grafts, peripheral embolism, splenectomy and transplantation of organs, Murray and Best administered heparin to 335 human beings in peripheral embolism, splenectomy, postoperative pulmonary embolism, pulmonary embolism with infarcts and phlebitis. Heparin is

not administered for from four to twenty-four hours after operations in order that the normal processes which control bleeding may begin to function. If there is any doubt about oozing or bleeding, the patient is not given heparin. There were only four cases of postoperative hematomas while under the influence of heparin. The hemorrhage stopped when heparin was discontinued and all the patients recovered. As there are no toxic effects, the patients in the wards have received general heparinization. The ordinary intravenous drip is used, and to the saline solution sufficient heparin is added to increase the clotting time of the patient to about fifteen minutes. Usually, heparin is added in the proportion of ten units of heparin to 1 cc. of saline solution. The injection is discontinued when the patient has regained normal activity, i. e., when the factors thought to contribute to the production of thrombosis have ceased to act. This is when shock has passed and the blood pressure and circulation are normal; the incision has healed and is not painful; so that deep respirations are possible; the patient feels well and energetic and moves about actively in bed and can do exercises; distention is gone; the appetite has returned and the gastrointestinal and urinary functions have returned to normal; the chest is clear, and the temperature and pulse are normal. A patient in whom active thrombosis is detected following an operation, during an illness or who has had a pulmonary embolism is probably in grave danger and would probably benefit from the administration of heparin. Until the methods of detecting those cases in which thrombosis is likely to develop are perfected, the group of postoperative cases in which this complication is likely to develop should be treated. The clinical use of heparin in phlebitis, embolism and operations on blood vessels are limited, but experimental evidence, especially in operations on blood vessels, gives strong support in favor of its value. In the suturing of vessels, the repair of aneurysms and arteriovenous fistulas, heparin may be of great assistance in obtaining good results. In blood transfusion heparin can be employed quite satisfactorily instead of citrate. It is useful also in removing blood for the ordinary laboratory tests where citrate or oxalate is commonly used. Other possible fields in which heparin might be useful, but which have not been explored, are coronary thrombosis and cerebrovascular thrombosis.

**Plasma in the Treatment of Shock.**—During the past year, in order to test the effectiveness of dried plasma in experimental shock with and without hemorrhage and to compare the dried plasma with the other commonly used intravenous fluids, Mahoney produced shock in dogs by cooling the peritoneal surfaces and by trauma to an extremity. The ultimate result of injecting dissolved, processed plasma in shock produced by peritoneal cooling was the same as with the injection of whole blood, but the elevation in blood pressure was more prompt and the improvement in the general condition of the dog was more striking. The blood pressure returned to normal within half an hour after the injection of the plasma and remained stabilized. The dogs regained consciousness, the body temperature returned to normal and the mucous membranes regained their normal color within one hour. In shock produced by trauma to an extremity the response of the blood pressure to plasma was only temporary. In one experiment the dog survived, but with all others the blood pressure increased temporarily and then steadily declined until death occurred. The dissolved, processed plasma has been utilized in treating patients who were in profound shock resulting from burns and from trauma. The number of cases is limited, but the results have been decidedly encouraging, especially with burns. The clinical study will be the subject of a future publication. The dissolved plasma should always be cross matched with the recipient's cells, preferably by the Coca compatibility test for direct matching.

**Primary Malignancy of Jejunum and Ileum.**—The four cases of primary malignant growth of the jejuno-ileum that Cameron encountered during the last eight years are cited and the reports of 196 similar cases in the literature during the same period are reviewed. Carcinomas outnumbered sarcomas 5:4, and malignant carcinoids 8:1. The average age incidence for these three groups is respectively 51, 48 and 57 years, exclusive of infants and children, who comprise 10 per cent of the sarcoma group and who are almost exclusively males. Two thirds of the primary neoplasms appear in the extremities and

one third in the intervening portions of the jejuno-ileal segment. From 80 to 90 per cent of carcinomas and malignant carcinoids and at least 50 per cent of sarcomas produce mechanical obstruction of the intestine. Infrequently there are neither localizing symptoms nor positive x-ray signs of localized intestinal involvement. Nonobstructive cases present almost insurmountable diagnostic difficulties. Occult blood in the stool is inconstant and frequently of no material value in differential diagnosis. Positive x-ray signs of localized intestinal involvement are essential for a diagnosis of a small intestinal neoplasm. A clinical diagnosis of jejuno-ileal neoplasm is made correctly in approximately one sixth of the cases. A positive clinical and x-ray diagnosis of malignant growth is seldom made and rarely warranted by the conditions found. Approximately two thirds of the cases are operable. The operative mortality is 30 per cent and five year survivals occur in less than 10 per cent.

## Archives of Dermatology and Syphilology, Chicago

38: 163-328 (Aug.) 1938

- LXXX. Blastomycosis, Coccioidial Granuloma and Paracoccidioidial Granuloma: Comparative Study of North American, South American and European Organisms and Clinical Types. M. Moore, St. Louis.—p. 163.
- Bowen's Disease with Metastases (Epithelioma of Bowen). E. Kunitzky, in collaboration with H. Jacoby, Breslau, Germany.—p. 191.
- \*Arsenical Dermatitis Produced in Treatment of Trichomonas Vaginitis: Report of Five Cases. Beatrice M. Kesten, New York.—p. 198.
- Leukoderma Acquisitum Centrifugum in Association with Lichen Planus. S. S. Robinson, Los Angeles.—p. 200.
- \*Incidence of Diseases of Skin in Feeble-minded Persons. T. Butterworth, Reading, Pa., and M. Wilson Jr., Spring City, Pa.—p. 203.
- Scleredema Adultorum (Buschke). H. L. Arnold Jr., Ann Arbor, Mich.—p. 210.
- \*Clinical Application of Stain for Spirochetes (Krajian). S. O. Chambers and J. R. Scholtz, Los Angeles.—p. 217.
- Citrus Fruit Dermatoses. H. Beerman, Philadelphia; G. H. Fondé, New York, and J. L. Callaway, Durham, N. C.—p. 225.
- Subsurface Mycelium and Dyes: Their Significance in Mycologic Studies. J. W. Williams, Cambridge, Mass.—p. 235.
- Squamous Cell Epithelioma in Psoriatic Patches. H. Charache, Brooklyn.—p. 241.
- Granuloma Inguinale: Report of Case of Involvement of Upper Lip and Pigmentation and Edema of Vulva. T. B. Hall, Kansas City, Mo.—p. 245.

**Arsenical Dermatitis.**—Acetarson and related compounds containing pentavalent arsenic are used with increasing frequency in the treatment of infections caused by *Trichomonas vaginalis*. Kesten cites four cases in which localized dermatitis followed the use of one of these compounds and in which the course, the appearance and the distribution of the eruption were strikingly similar. In a fifth case the dermatitis produced was generalized and indistinguishable from that produced by the arsphenamines. These cases are examples of sensitization to a pentavalent arsenical following absorption through the vaginal mucous membrane.

**Cutaneous Diseases in Feeble-minded.**—Butterworth and Wilson examined the skin of the entire population (1,895 patients) of the Pennhurst State School for the Feeble-minded. There were 780 dermatologic diagnoses made in 654 cases. The incidence of cutaneous diseases and abnormalities was about equal in the two sexes. A total of sixty-eight different dermatologic conditions was observed. Of the total number of diagnoses, 546 were in order of frequency acne vulgaris, nevi, tinea, pyoderma, distended stria, traumatic dermatitis, verrucae, hypertrichosis, perlèche and contagious molluscum. There were fifteen cases of seborrhea and fourteen cases of scabies.

**Stain for Spirochetes.**—For the last five years in the department of syphilis of the Los Angeles County Hospital Chambers and Scholtz have made clinical use of a staining method (a modification of Dieterle's method developed by Krajian) for the identification of *Spirochaeta pallida* in lesions suspected of being syphilitic. They have used it in nearly 500 cases, the material including tissue from subjects with all types of cutaneous and visceral syphilis, as well as necropsy material. The present communication deals only with its use in cases of primary syphilis. The procedure is essentially the removal of a piece of tissue measuring 2 by 5 mm. from the suspected lesion, placing it in a 10 per cent solution of formaldehyde and sending it to a laboratory for staining. The staining procedure requires less than an hour. The tissue is sectioned by



the rapid freezing technic. The stain has been found accurate in identifying *Spirochaeta pallida* in cases of suspected primary syphilis. Its use in the public health campaign against syphilis is suggested. The stain has been found helpful in many other cases besides those involving suspected primary lesions. It has shown spirochetes in secondary eruptions, in a small number of late cutaneous syphilids, in necropsy material and in surgical specimens.

### Archives of Internal Medicine, Chicago

62: 1-180 (July) 1938

- Pathogenesis of Bundle Branch Block: Review of Literature; Report of Sixteen Cases with Necropsy and of Six Cases with Detailed Histologic Study of Conduction System. W. M. Yater, Washington, D. C.—p. 1.
- Unusual Reactions of Patients with Hypertension to Glyceryl Trinitrate. H. C. Lueth and T. G. Hanks, Chicago.—p. 97.
- \*Acute and Chronic Mediastinitis: Study of Sixty Cases. C. S. Keefer, Boston.—p. 109.
- \*Influence of Diarrhea on Vitamin B<sub>1</sub> Requirement. Margaret Dann and G. R. Cowgill, New Haven, Conn.—p. 137.
- Change in Plasma Volume During Recovery from Congestive Heart Failure. W. B. Wood and C. A. Janeway, Baltimore.—p. 151.
- Recent Advances in Knowledge of Anterior Lobe of Hypophysis. E. H. Ryncarson and C. H. Hodgson, Rochester, Minn.—p. 160.

**Acute and Chronic Mediastinitis.**—Keefer reports cases which show that an acute abscess or a chronic inflammatory lesion of the mediastinum may occur as a result of a variety of infections. In some cases the process is only part of a more widespread and extensive process, and for that reason it is of interest only so far as the complete diagnosis is concerned. In other cases, however, an abscess is the principal lesion and when recognized it can be treated with a reasonable degree of success. Acute and chronic mediastinal infections are most common in the posterior mediastinum. The common causes of posterior mediastinitis are perforation of the esophagus and suppurative lymph nodes. Abscess of the anterior mediastinum results most often from an infection in the neck or from osteomyelitis of the sternum. The diagnosis of mediastinal abscess depends on (1) the presence of a condition which is capable of producing mediastinal infection, (2) the symptoms and signs of an infection, with local physical signs referable to the mediastinum, and (3) the results of aspiration or exploration. The prognosis is poor, but when the process is localized to a part of the mediastinum that is accessible for surgical intervention the prognosis is better. Chronic fibrous mediastinitis is due to healed or active tuberculosis, syphilis or pyogenic infection. There is often an associated fibrous pericarditis, so that the clinical picture may be that of congestive heart failure due to cardiac compression. Cardiac failure with congestion may also accompany mediastinitis when there is an associated defect of the mitral valve or an aneurysm of the aorta compressing the pulmonary artery. When this is the case the mediastinitis may be latent or may play only a small part in the clinical features.

**Diarrhea and Vitamin B<sub>1</sub> Requirement.**—Dann and Cowgill carried out experiments on dogs in order to obtain data applicable to an estimation of the vitamin B<sub>1</sub> requirement of patients suffering from diarrhea and on the mode of excretion of this vitamin. They find that diarrhea following adequate storage of vitamin B<sub>1</sub> has little effect on the time required for depletion to the level of anorexia. It seems evident that when the animals are not receiving vitamin B<sub>1</sub> by mouth and the question of failure of absorption due to diarrhea is not involved, the rate of loss of stored vitamin B<sub>1</sub> from the body is not accelerated by diarrhea. In marked contrast were the results when tissue stores were lowered and daily oral doses of vitamin B<sub>1</sub> were administered. When mild diarrhea was induced under these conditions, without exception there was a definite increase in the amount of the vitamin required. This increase ranged from 18 to 82 per cent. The increase can be accounted for by the failure of absorption of the food materials containing vitamin B<sub>1</sub>. The concomitant loss of part of the caloric value of the ingested food did not prevent the failure of appetite which is characteristic of vitamin B<sub>1</sub> deficiency. The consistent increase in requirement seen with the daily oral doses was absent when the daily dose of vitamin B<sub>1</sub> was given parenterally. With the exception of one dog, which showed a marked increase, the amounts of rice polishings concentrate

needed to maintain appetite when the dogs were subjected to diarrhea were not significantly larger than those needed in the absence of diarrhea. The average value for the requirement of the vitamin given parenterally was 25 milliequivalents per kilogram daily without diarrhea and 25.5 milliequivalents with diarrhea. The apparently lower requirement of vitamin B<sub>1</sub> by this route as compared to that administered orally is of little significance in view of the wide range of individual variation. The results indicate that no significant amounts of vitamin B<sub>1</sub> are lost by excretion into the intestinal tract when its activity is stimulated and fluid loss is encouraged by diarrhea induced with magnesium sulfate. The possibility of excretion in the bile is by no means excluded. However, if these results are considered in conjunction with those obtained in 1930 (Cowgill, Rosenberg and Rogoff) it appears probable that the chief route of excretion of vitamin B<sub>1</sub> is by way of the kidney. Clinical observations by a number of authors are cited, revealing that avitaminosis, especially of the B complex, is a not infrequent complication of chronic diseases of the gastrointestinal tract in which diarrhea is a symptom. Chronic ulcerative colitis is a conspicuous example of such conditions. A normal person weighing 66 Kg. (145 pounds) should ingest a diet having a vitamin-calory ratio of at least 1.87. The minimal ratio for an adult weighing 35 Kg. (77 pounds) is 1 and for one of 80 Kg. (176 pounds), 2.25. It is advised that, after the minimal vitamin-calory ratio required by the patient has been ascertained and the ratio provided by the diet he is receiving has been calculated, his vitamin B<sub>1</sub> intake should be increased by means of some supplement, so that if the diarrhea is mild he receives a vitamin-calory ratio of at least double the calculated minimum; if the diarrhea is moderately severe the vitamin-calory ratio should be three times the minimum. For the majority of patients showing diarrhea it is preferable to give the extra vitamin in the form of foods rich in vitamin B<sub>1</sub>, such as brewers' yeast and wheat germ.

### Archives of Pathology, Chicago

26: 449-602 (Aug.) 1938

- Cholecystitis and Hypertrophy of Muscularis of Gallbladder. K. B. Lawrence and S. Warren, Boston.—p. 449.
- Experimental Hypercholesteremia in Dogs. W. C. Corwin, Rochester, Minn.—p. 456.
- Destruction of Ganglion Cell in the Infant Brain. C. R. Tuthill, Staten Island, N. Y.—p. 463.
- Tooth Ring Analysis: IV. Neonatal Dental Hypoplasia: Analysis of Teeth of an Infant with Injury of the Brain at Birth. I. Schour and R. Kronfeld, Chicago.—p. 471.
- Comparison of Cutaneous Lesions Produced in Rabbits by Intracutaneous Inoculation of Spirochetes from Yaws and Syphilis. H. W. Ferris and T. B. Turner, New York.—p. 491.
- New and Simple Method for Detection of Blood by Heating. A. M. Moody, San Francisco; F. Proeschner, San Jose, Calif., and J. L. Carr, San Francisco.—p. 501.
- Pathologic Anatomy of Hypophysis and Adrenals in Anencephaly. D. M. Angevine, New York.—p. 507.
- Subdural Hematoma. A. B. Baker, Minneapolis.—p. 535.

### Canadian Medical Association Journal, Montreal

39: 1-104 (July) 1938

- Acute Anterior Poliomyelitis: Review of Sixty-Six Adult Cases Which Occurred in the 1937 Ontario Epidemic. H. H. Hyland, W. J. Gardiner, F. C. Heil, W. A. Oille and O. M. Solandt, Toronto.—p. 1.
- Experimental Studies with Sulfanilamide and Other Compounds. P. H. Greey, Toronto.—p. 12.
- Use of Sulfanilamide in Clinical Medicine. W. H. Brown, Toronto.—p. 15.
- Sulfanilamide as Urinary Antiseptic: Preliminary Report. D. R. Mitchell, Toronto.—p. 22.
- Silicosis: Experimental Study of Leaching of Silicates in Tissues. Helen E. Williams and D. A. Irwin, Toronto.—p. 26.
- Hypoglycemic Substance from Roots of the Devil's Club (*Fatsia horrida*). R. G. Large and H. N. Brocklesby, Prince Rupert, B. C.—p. 32.
- Present Day Problems in the Management of Diabetes. F. N. Allan, Boston.—p. 36.
- Allergy in Childhood. H. L. Bacal, Montreal.—p. 41.
- Modern Trends in Child Psychiatry. C. H. Gundry, Brockville, Ont.—p. 46.
- Some Observations on Petrous Tip Suppuration: Report of Three Cases. D. E. S. Wishart, Toronto.—p. 50.
- Bilateral Spontaneous Pneumothorax: Two Cases. D. B. Westcott, Mount Forest, Ont.—p. 57.
- Papillary Squamous Cell Epithelioma of Renal Pelvis. A. Strasherg, Montreal.—p. 58.

# Canadian Public Health Journal, Toronto

29: 321-372 (July) 1938

Public Health Progress: Presidential Address. P. S. Campbell, Halifax, N. S.—p. 321.

\*Outbreak of Staphylococcal Food Poisoning. J. Roberts, W. J. Deadman and F. J. Elliot, Hamilton, Ont.—p. 325.

\*Staphylococcal Food Poisoning in Billings, Mont. W. F. Cogswell, B. K. Kilbourne and Edith Kuhus, Helena, Mont.—p. 333.

Some Factors Concerning Care of the Newborn. A. Brown, Toronto.—p. 337.

Objectives of Industrial Hygiene. F. M. R. Bulmer, Toronto.—p. 345.

**Staphylococcal Food Poisoning.**—Roberts and his associates state that from March 9 to 15, 1938, twenty-one persons (five families) were reported as being ill. Investigation supported the incrimination of custard-filled pastry, as the only members unaffected were those who had not eaten the pastry. The interval of time elapsing between the meal and the symptoms varied from one and one-half to four hours. Those who became ill suffered abdominal pain, vomiting and diarrhea. All employees of the incriminated bakery were carefully examined and bacteriologic tests were made. Laboratory studies of the cream-filled pastry showed the presence of *Staphylococcus aureus*. This organism was isolated also from the gastric contents of members of one of the five families while in the hospital, and from the feces. The same organism was isolated from jam pails, pastry bags and milk taken from a can at the bakery.

**Staphylococcal Food Poisoning in Montana.**—According to Cogswell and his co-workers, on May 26, 1936, information was received by the state board of health of the occurrence of an outbreak of food poisoning in Billings, Mont. The investigation showed that various forms of custard-filled and cream-filled cakes were used by almost all of those who suffered illness. Several cases of illness occurred also in Laurel. Study showed that cases of illness had occurred as early as May 16, both in Billings and in Laurel. The major outbreak, however, occurred during the period May 23 to 26. More than fifty cases were investigated and probably a number of other cases occurred with milder symptoms. The patients suffered an acute illness developing within four or five hours after the infected food was eaten. The majority suffered marked abdominal pain followed by vomiting and frequent bowel movements, in some cases as many as twenty. Examination of the pastry showed the presence of staphylococci in large numbers in the fillings. Reactions typical of *Staphylococcus albus* were obtained. In gelatin stabs a slight cuplike liquefaction occurred. *Staphylococcus aureus* as well as *Staphylococcus albus* strains were recovered from orange rolls. It is evident that both *Staphylococcus albus* and *aureus* were associated in the poisoning. The investigation did not reveal the source of the contamination. On the discontinuance of the distribution of cakes with such fillings, no further cases occurred.

# Connecticut State Medical Society Journal, Hartford

2: 357-422 (Aug.) 1938

Problems for Resuscitation. H. S. Ruth, Philadelphia.—p. 358.

Syphilis in Pregnancy. J. R. Miller, Hartford.—p. 363.

# Indiana State Medical Assn. Journal, Indianapolis

31: 379-432 (Aug.) 1938

\*Industrial Dermatoses. L. Schwartz, New York.—p. 379.

The Problem of Industrial Dermatoses. F. W. Cregor and N. M. Beatty, Indianapolis.—p. 389.

The Pathology of Industrial Pulmonary Hazards. B. W. Rhamsy, Fort Wayne.—p. 389.

Silicosis, an Occupational Disease. C. A. Stayton, Indianapolis.—p. 393.

Intracapsular Femoral Fracture: Selection of Type of Treatment. E. B. Mumford, Indianapolis.—p. 398.

Evipal Soluble Anesthesia in Bronchoscopic Treatment of Bronchiectasis. P. D. Crimm and D. M. Short, Evansville.—p. 405.

Basketball. I. D. White and E. C. Boyd, Clinton.—p. 407.

Leukorrhea and Office Practice of Gynecology. L. A. Gray, Louisville, Ky.—p. 409.

**Industrial Dermatoses.**—Schwartz points out that it is estimated that industrial dermatitis constitutes more than 65 per cent of all cases of occupational disease reported in the United States and from available records it is estimated that there are about 20,000 patients in the United States with industrial dermatitis of sufficient severity to lose time from work. Actually there are many times this number, because a large majority of cases of industrial dermatitis are not reported even though they may be treated by the plant physician or by the insurance company doctors. The chief active causes of industrial dermatitis differ

in various localities according to the prevailing type of industry. In rural communities plant poisonings are prevalent, whereas in large manufacturing communities the chemical irritants are the chief causes. The actual causes of industrial dermatoses are mechanical and physical trauma, chemical irritants, specific irritants, plants and biologic agents. Some of these various causative factors act as keratin and fat solvents, desiccating or hygroscopic agents, protein precipitants, oxidizers, hydrolizers, stimulants to the keratin-forming cells of the skin or sensitizers. There is no one factor on which a diagnosis of industrial dermatitis can be made. In most instances the appearance of the lesions gives no clue to the irritant. Especially is this the case in the acute and chronic eczematoid types of occupational dermatoses. In applying medication to the lesions, only the mildest form of ointments or lotions should be used. Strong ointments are apt to irritate the skin and cause more dermatitis. Desensitization has not given any encouraging results. The ideal prevention is to safeguard the operation so that injurious chemicals do not come in contact with the skin.

# Journal of Bacteriology, Baltimore

36: 1-110 (July) 1938

Coliform Intermediates in Human Feces. L. W. Parr, Washington, D. C.—p. 1.

Effects of Sublethal Doses of Monochromatic Ultraviolet Radiation on Growth Properties of Bacteria. A. Hollaender and B. M. Duggar, Madison, Wis.—p. 17.

Classification of Acid-Fast Bacteria: II. Ruth E. Gordon and W. A. Hagan, New York.—p. 39.

Study of Gelatin Digestion by *Bacillus subtilis*. A. D. Console and O. Rahn, Ithaca, N. Y.—p. 47.

Fermentation of Mucic Acid by Some Intestinal Bacteria. L. Sternfeld and F. Saunders, Chicago.—p. 53.

Gelatin as Source of Growth Promoting Substances for Bacteria. S. A. Koser, B. D. Chinn and F. Saunders, Chicago.—p. 57.

Influence of Hydrogen Ion Concentration on Dissimilation of Glucose by *Aerobacter indologenes*. M. Mickelson and C. H. Werkman, Ames, Iowa.—p. 67.

Fermentation of Disaccharides by *Streptococcus thermophilus*. J. M. Sherman and Pauline Stark, Ithaca, N. Y.—p. 77.

Influence of Time and Temperature of Incubation on Heat Resistance of *Escherichia coli*. P. R. Elliker and W. C. Frazier, Madison, Wis.—p. 83.

Bound Water Content of Vegetative and Spore Forms of Bacteria. C. A. Friedman and B. S. Henry, Seattle.—p. 99.

# Journal of Experimental Medicine, New York

68: 147-298 (Aug.) 1938

\*Unidentified Virus Producing Acute Meningitis and Pneumonitis in Experimental Animals. T. Francis Jr. and T. P. Magill, New York.—p. 147.

Effect of Corticosterone and Related Compounds on Renal Excretion of Electrolytes. G. W. Thorn, L. L. Engel and H. Eisenberg, Baltimore.—p. 161.

Intraperitoneal and Intracerebral Routes in Serum Protection Tests with Virus of Equine Encephalomyelitis: I. Comparison of Two Routes in Protection Tests. P. K. Olitsky and C. G. Harford, New York.—p. 173.

Production of Experimental Osteomyelitis in Rabbits by Intravenous Injection of *Staphylococcus aureus*. R. H. S. Thompson and R. J. Dubos, New York.—p. 191.

Sensory Neuron Degeneration in Vitamin Deficiency: Degeneration of Posterior Columns of Spinal Cord, Peripheral Nerves and Dorsal Root Ganglion Cells in Young Pigs Fed a Diet Containing Thiamin (B<sub>1</sub>) and Riboflavin But Otherwise Deficient in Vitamin B Complex. M. M. Wintrobe, D. M. Mitchell and L. C. Kolb, Baltimore.—p. 207.

Isolation of Blood Group A Specific Substance from Commercial Peptone. W. F. Goebel, New York.—p. 221.

Factors Influencing Persistence of Choriomeningitis Virus in Blood of Mice After Clinical Recovery. E. Traub, Princeton, N. J.—p. 229.

Passage of Rabbit Virulent Type III Pneumococci from Respiratory Tract of Rabbits into Lymphatics and Blood. R. Z. Schulz, Madeleine F. Warren and C. K. Drinker, Boston.—p. 251.

Relation Between Degree of Immunity of Mice Following Vaccination with St. Louis Encephalitis Virus and Titer of Protective Antibodies of Serum. H. L. Hodcs and L. T. Webster, New York.—p. 263.

Sensitization and Antibody Formation with Increased Resistance to Tuberculous Infection Induced by Heat Killed Tubercle Bacilli. J. Freund and E. L. Opie, New York.—p. 273.

**Unidentified Virus Producing Meningitis and Pneumonitis.**—Francis and Magill describe an infectious agent which apparently belongs to the class of filtrable viruses but which, on the basis of the evidence at hand, is not identical with any previously known virus. The virus was repeatedly recovered in 1936 from ferrets inoculated with throat washings of patients suffering from an epidemic disease clinically indistinguishable from epidemic influenza. It is impossible, however, to conclude whether the virus is of ferret or human origin. The virus has

multiple tropisms and is pathogenic for mice, ferrets and monkeys of both *Macacus rhesus* and *Macacus cynomolgus* species. Intranasal infection of mice and ferrets causes extensive pneumonic lesions of fatal severity. Intracerebral inoculation of the virus produces in monkeys a lymphocytic choriomeningitis from which the animal recovers, while in mice a rapidly fatal choriomeningitis is produced. Fatal paralysis occurs in a moderate proportion of mice which receive the virus by intraperitoneal or subcutaneous routes, while the remainder become immune to the intracerebral test but not to the intranasal test. Subcutaneous inoculation of mice, monkeys, ferrets, rabbits and guinea pigs causes local granulomatous induration of the skin with enlargement of the regional lymph nodes. Although the new agent possesses many features in common with the virus of lymphocytic choriomeningitis and the virus of venereal lymphogranuloma, cross immunity tests have failed to yield any evidence that it is immunologically related to either the virus of venereal lymphogranuloma or lymphocytic choriomeningitis. For purposes of identification the name virus of acute meningopneumonitis is suggested.

### Philippine Islands Med. Association Journal, Manila

18: 347-410 (June) 1938

Wassermann Reaction of Cerebrospinal Fluid in Diagnosis of Yaws of the Nose and Throat. A. S. Fernando and G. de Ocampo, Manila.—p. 347.

Hypochromic Anemia Secondary to Multiple Parasitism. A. B. M. Sison and D. G. Tolentino, Manila.—p. 353.

Gas Bacillus Infection: Its Incidence and Treatment. J. Eduque and B. Pangilinan, Manila.—p. 359.

Submucous Resection of Nasal Septum: Pica for Its More Frequent Use Among Filipinos. L. D. Abad and J. C. Antonio, Manila.—p. 365.

Prontosil and Prontylin in Forty-Five Cases of Erysipelas. C. Mata, San Juan, Rizal.—p. 369.

### Public Health Reports, Washington, D. C.

53: 1181-1230 (July 15) 1938

Relative Amount of Ill Health in Rural and Urban Communities. H. F. Dorn.—p. 1181.

\*The Prevalence of Undulant Fever (Brucellosis) in the United States.—p. 1195.

Studies on Fate of Selenium in the Organism. M. I. Smith, B. B. Westfall and E. F. Stohman.—p. 1199.

Two New Species of Meringis Jordan (Siphonaptera). G. M. Kohls.—p. 1216.

53: 1231-1272 (July 22) 1938

The Absorption and Excretion of Lead Arsenate in Man. L. T. Fairhall and P. A. Neal.—p. 1231.

The Persistence of Viruses of Endemic (Murine) Typhus, Rocky Mountain Spotted Fever and Boutonneuse Fever in Tissues of Experimental Animals. C. B. Philip and R. R. Parker.—p. 1246.

Endemic Typhus Virus in Mice. G. D. Brigham.—p. 1251.

A Rapid Method for Drying Thick Blood Films. M. D. Young.—p. 1256.

**Undulant Fever in the United States.**—Beginning in 1927 the United States Public Health Service has received reports of cases of brucellosis from the various states. Only 112 cases were reported in 1927 but by 1937 the number had increased to 2,497. The total number of cases actually occurring is undoubtedly much larger than that reported. About one sixth of the cases reported during 1937 were in Oklahoma. Prior to 1936 few cases were recognized in Oklahoma, but during 1936 ninety-six cases were reported, followed by 431 cases in 1937. Preliminary reports for 1938 indicate that the number of cases will probably be larger than in 1937. The majority of people have no direct contact with *Brucella*-infected animals, and, if all milk were efficiently pasteurized or boiled before being consumed, there would be no brucellosis excepting in those whose work brings them into contact with infected animals or infected carcasses.

53: 1273-1335 (July 29) 1938

Frequency and Duration of Disabilities Causing Absence from Work Among Employees of a Public Utility, 1933-1937. W. M. Gafaer and Elizabeth S. Frasier.—p. 1273.

\*Antagonism Between Species of Malaria Parasites in Induced Mixed Infections: Preliminary Note. B. Mayne and M. D. Young.—p. 1289.

\*Toxicology of Phenylidichlorarsine: II. Response of Man to PDA-Oil Mixtures. R. R. Sayers and H. C. Dudley.—p. 1292.

**Antagonism Between Species of Malaria Parasites.**—In combining *Plasmodium vivax* and *Plasmodium malariae* in the treatment of sixteen patients with dementia paralytica,

Mayne and Young found that twelve demonstrated the presence of both species whereas four showed only one species. When the two species of parasites appeared in the peripheral blood stream concomitantly, one rapidly became predominant and the other tended to disappear. There is an apparent antagonistic action of one species against the other. In the mixed infection of *Plasmodium vivax* and *Plasmodium malariae* the predominant species is not always the same. Of the twelve mixed infections, nine showed *Plasmodium vivax* as predominant while three showed *Plasmodium malariae*. Owing to the suppression of one species by the predominant species it seems evident that there are many more cases of mixed infections than are actually reported, especially in surveys in the field under normal conditions, where only a few examinations are made.

**Toxicology of Phenylidichlorarsine.**—An examination of the results that Sayers and Dudley obtained from sixteen men subjected to cutaneous tests of the vesicant qualities of 1 per cent oil mixtures of phenylidichlorarsine shows that there is a marked difference in the susceptibility of certain persons to their action. Three men showed definite initial cutaneous reactions, seven gave no subjective or objective symptoms of reaction, while six showed varying degrees of susceptibility from moderate to slight. It seems probable that preliminary cutaneous tests would be helpful in determining those workers who would have a marked tendency toward cutaneous reactions when working in wood-treating plants. By selecting workers showing no cutaneous reaction, many of the untoward effects of the oil mixtures of phenylidichlorarsine could be prevented. Protection is possible by spreading a salve, prepared from petrolatum and ferric hydroxide, over the exposed cutaneous areas of the worker. Impregnated wood free from surface oil causes no reactions when applied to the skin of men for as long as one hour. Steaming after impregnation removes surface oil and renders the oil mixture in the body of the wood nonvesicant to rabbits.

### Puerto Rico J. Pub. Health & Trop. Med., San Juan

13: 427-540 (June) 1938

Ashford's Bibliography of Sprue. F. M. Hanes, Durham, N. C.—p. 427. The Stomach in Tropical Sprue. A. Rodriguez Ollerios, San Juan.—p. 503.

Chromoblastomycosis in the Dominican Republic. A. L. Carrión, San Juan, and M. F. Pimentel-Inubert, Trujillo City, Dominican Republic.—p. 522.

### South Carolina Medical Assn. Journal, Greenville

34: 173-200 (July) 1938

Group Hospitalization in South Carolina. A. E. Baker, Charleston.—p. 173.

Traumatic Injuries of the Thorax. Deryl Hart, Durham, N. C.—p. 175.

### Texas State Journal of Medicine, Fort Worth

34: 193-256 (July) 1938

Preventive Pediatrics. R. A. Strong, New Orleans.—p. 200.

Culture of Human Marrow. E. E. Osgood, Portland, Ore.—p. 206.

\*Action of Sulfanilamide: Failure to Demonstrate Antihemolytic Antifibrinolytic and Antitoxic Effect of the Drug. H. A. Kemp, Dallas.—p. 208.

Observations and Notes on Culture of the Gonococcus. B. F. Stout and D. A. Todd, San Antonio.—p. 211.

Peptic Ulcer Treated by Posterior Pituitary Extract: Two Years' Experience. M. H. Metz and R. W. Lackey, Dallas.—p. 214.

Metrazol Therapy of Schizophrenia. L. Barbato, Galveston.—p. 220.

Practical Cultural Methods for Detection of Typhoid and Related Bacilli. S. W. Bohls and J. V. Irons, Austin.—p. 227.

Night Blindness as Determined by Biophotometer. T. J. Vanzant, Houston.—p. 231.

\*Air Conditioning in Relation to Upper Respiratory Infections. R. E. Windham, San Angelo.—p. 235.

Simple Method for Closing Thin Gastric and Duodenal Tubes Temporarily. H. Lamm, Kansas City, Mo.—p. 239.

**Action of Sulfanilamide.**—In an effort to repeat the observations of Osgood, Kemp used two sets of hemolytic streptococci: one set of four cultures from a group of patients on whom sulfanilamide seemed to have exerted a most beneficial effect; the other (four cultures) from patients who had received vigorous treatment with sulfanilamide without beneficial effect, all dying of their streptococcal infection. To test the antihemolytic effect of the drug, blood agar plates containing sulfanilamide in dilutions of 1:1,000, 1:10,000 and 1:100,000 were

seeded with the foregoing cultures. No significant differences could be observed between these plates and plates containing no sulfanilamide. As a test of the antitoxic qualities of the drug, an attempt was made to see if dilutions as high as 1:1,000 would neutralize the streptococcus toxin used for the determination of susceptibility to scarlet fever, the Dick toxin. Fifteen positive reactors were discovered in testing seventy-two medical students and these reactors were inoculated simultaneously with Dick toxin in the skin of one forearm and with a mixture of sulfanilamide 1:1,000 and Dick toxin in the skin of the other forearm. The two sites of injection displayed the positive reaction at the same time and with the same intensity, there being no neutralization of the toxin by the drug at 1:1,000. Concentrations as high as 1:3,500 failed to neutralize the fibrinolytic qualities of the cultures, even when amounts as small as 0.2 cc. of a twenty-four hour broth culture were used with the standard amount of serum used in such tests. The same high concentrations of sulfanilamide did not interfere with fibrin formation in control tubes carrying no streptococci. Whatever the action of sulfanilamide, the in vitro methods fail to reveal it. If the beneficial effects of the drug are as real as they are apparent, the mode of action must be sought for in living tissue as Osgood has tried to do. Whatever its reactions there, it would not appear that these reactions belong to the category of immune substances. The immune substances, antibodies, are characterized by their reactions both in vitro and in vivo. Since the drug failed to neutralize the streptococcus toxins (hemolysin, dermatoxin and fibrinolysin) and since streptococcus antitoxin will neutralize these toxins both in vivo and in vitro, it seems reasonable to conclude that sulfanilamide is not an antitoxin, whatever its mode of action.

**Air Conditioning and Infections of Respiratory Tract.**—Windham states that pathogenic effects of catarrh and colds may be linked to the autonomic nervous system because when climatic changes are frequent and severe the autonomic nervous system is fatigued. Long exposure to cold produces dryness of the mucous membrane and leads to susceptibility to infections of the upper part of the respiratory tract. Climates and diseases are interrelated in an active role, for in regions of highly changeable temperature and pressure the population is usually badly affected with chronic respiratory and arthritic troubles, sinusitis, chronic bronchitis, tuberculosis and rheumatoid arthritis. With the man-made climate or weather in proper air conditioning, the patient can be placed in rooms suitable to his particular disease and expect to get maximal results in the minimal time. For general comfort the temperature should be kept from 10 to 15 degrees below the outside temperature in summer, with from 50 to 55 per cent relative humidity. Rooms for arthritic patients should maintain a temperature of from 80 to 85 F., from 35 to 30 per cent relative humidity; for tuberculosis 68 F. and from 40 to 50 per cent relative humidity; for common colds and respiratory infections from 70 to 72 F. and 55 per cent relative humidity. Patients having infections of the respiratory tract placed in air conditioned rooms have shown a much more rapid and satisfactory recovery, and no patient placed in air conditioned rooms has acquired any colds or other respiratory disorders.

**United States Naval Med. Bulletin, Washington, D. C.**  
36: 327-454 (July) 1938

- Field Sanitation. W. L. Mann.—p. 327.  
Effect of the Age of Neoparsphenamine on Reaction Expectancy. C. S. Stephenson, T. F. Probey and W. T. Harrison.—p. 425.  
Effect of Moisture and Age on Stability of Neoparsphenamine. T. F. Probey and W. T. Harrison.—p. 429.  
Insecticidal Powders: Comparative Study. F. S. Johnson, with technical assistance of A. G. Vallee.—p. 435.  
A Presumptive Test for Potency of Cowpox Virus. J. B. Moloney.—p. 445.

**West Virginia Medical Journal, Charleston**

34: 337-388 (Aug.) 1938

- The Doctor as a Citizen. C. W. Waddell, Fairmont.—p. 337.  
Standardization of Laboratory Technic. G. H. Barksdale, Charleston.—p. 346.  
Typhoid Fever. A. M. Price, Charleston.—p. 349.  
Postgraduate Extension Courses in Pediatrics. G. M. Lyon, Huntington.—p. 352.  
Professional Relationship Between Physician and Pharmacist. J. L. Hayman, Morgantown.—p. 358.  
Teratoma of the Testis: Case Report. G. G. Irwin, Charleston.—p. 363.

**FOREIGN**

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

**British Journal of Children's Diseases, London**

35: 85-164 (April-June) 1938

- Hysteria in Childhood. Mildred Creak.—p. 85.  
Addison's Disease in Children. F. R. B. Atkinson.—p. 96.  
Subcutaneous Emphysema in the Newborn. G. Slot and W. D. Brown.—p. 116.

**British Journal of Dermatology and Syphilis, London**

50: 333-398 (July) 1938

- Epitheliona Adenoides Cysticum. L. Cavatard.—p. 333.  
Further Observations on Dermatitis Due to Celery in Vegetable Canning. S. A. Henry.—p. 342.  
\*Possible Trichophytic Granuloma: Two Cases. J. F. Smith.—p. 352.  
Recurrent Bullous Eruption of the Feet. E. A. Cockayne.—p. 358.

**Trichophytic Granuloma.**—Smith describes the cases of two boys with a peculiar granulomatous eruption involving the scalp, face, limbs, groin, penis and buccal mucosa, with a prolonged course, little if at all influenced by treatment and ending in recovery with slight scarring. The finding of mycelium in sections from a recent lesion in the second case was the only positive suggestion as to the cause. The failure to respond to massive doses of potassium iodide was against a diagnosis of blastomycosis or sporotrichosis. The mycelium suggests a hyphomycosis rather than a blastomycosis, and no torulae could be detected, but the clinical appearances, and particularly the severe involvement of the buccal mucosa, with ultimate scarring, were unlike those of any deep trichophytia which the author has seen.

**British Journal of Radiology, London**

11: 425-504 (July) 1938

- Historiography. P. Lamarque.—p. 425.  
Kymography as Aid in Differential Diagnosis of Mediastinal Tumors. A. Meyer.—p. 436.  
Two Radiographic Teaching Models. W. E. Boyd.—p. 444.  
Construction of Superficial Applicators for Radium Therapy. R. Paterson and W. MacVicar.—p. 452.  
Geometric Factors in Measurement of Radiation in Roentgens. C. C. Lauritsen.—p. 471.  
X-Ray Methods in Investigation of Failure of Metals. H. J. Gough and W. A. Wood.—p. 479.  
Theory of Action of Radiations on Biologic Materials Capable of Recovery: Part I. Time-Intensity Factor. D. E. Lea.—p. 489.  
Physical Measurements in High Voltage X-Ray Therapy. R. Phillips and G. S. Innes.—p. 498.

**British Medical Journal, London**

2: 107-162 (July 16) 1938

- Cerebral Integration of Ocular Movements. G. Holmes.—p. 107.  
\*Chronic Mastitis and Breast Cancer: Family History of Five Sisters. W. S. Handley.—p. 113.  
\*Dysfunctional Uterine Bleeding Treated with Progesterone. T. N. Macgregor.—p. 116.  
Brodie's Abscess and Its Differential Diagnosis. J. F. Brailsford.—p. 119.  
Parasitic Fetus Successfully Removed by Operation. M. Greenberg.—p. 123.

**Chronic Mastitis and Breast Cancer.**—Handley discusses the histories of five sisters with cancer of the breast observed for nineteen years. Their mother died at the age of 69 of cancer of the liver and her mother at the age of 37 of abdominal cancer, probably gastric, since it was attended by persistent vomiting. Five separate breast cancers in the family have been treated with radical operation—four by the author and one by Warwick; and in addition two simple mastectomies have been done—one for incipient cancer, the other for precancerous mastitis. Two of the sisters have died of breast cancer and three are well at the time of writing. The two sisters who died survived operation eleven and nine years, respectively. The results offer encouragement that routine mastectomy for chronic mastitis can be safely rejected in favor of roentgen treatment followed by periodic examination, with mastectomy in reserve if danger signals show themselves. Though the author believes radiation to be a valuable prophylactic, it cannot in all cases be an efficient substitute for surgery.

**Uterine Bleeding Treated with Progesterone.**—Macgregor presents the results of thirteen cases of irregular uterine bleeding, essentially associated with a disturbance of the pituitary-ovarian mechanism, treated with progesterone, 5 mg.

given daily. In ovular bleeding the treatment was given two or three days before the expected anomalous bleeding, the aim being to maintain endometrial stimulation during the time of ovulation and thus tide over the period when the estrogenic content of the blood was lowered. In hemorrhagic metropathia progesterone may be given at any phase. During the bleeding stage 5 mg. was administered daily until the bleeding was controlled. During the amenorrhoeic phase 5 mg. was given daily, the total dosage amounting to from 25 to 30 mg. Three of the five patients with the ovular type of bleeding have had regular menstruation for the last eighteen to twenty-two months. One patient had three regular periods after cessation of therapy; she then became pregnant and aborted at the end of the second month of gestation. The other patient, though not completely well, has now only a brownish discharge, whereas formerly she had frank hemorrhage for a few days between every two periods. In four of the seven cases of anovular bleeding menstruation became normal in duration and periodicity, in two of which there has recently been a recurrence of the irregularity. In the remaining three patients the uterine endometrium was examined microscopically before and after treatment and as a result of the treatment the hyperplastic endometrium has been changed into a pseudosecretory phase. These patients have only recently been under treatment and two have had two normal periods. Comparatively few favorable results follow the indiscriminate use of progesterone therapy.

### Journal of Laryngology and Otology, London

53: 417-484 (July) 1938

- \*Progressive Facial Palsy Produced by Intratemporal Epidermoids. G. Jefferson and A. A. Smalley.—p. 417.  
Thyrotoxic Therapy in Otosclerosis: Report of Forty-Two Cases. M. A. Goldstein.—p. 444.

**Facial Palsy from Intratemporal Epidermoids.**—During the last five years Jefferson and Smalley encountered six cases in which a slowly progressive facial palsy has been proved to be due to an epidermoid lodged within the temporal bone. No infection was present in any of the cases, and three patients had never had otitis media. All, however, were deaf to a greater or lesser degree on the side of the palsy, and this fact led to a painstaking investigation of the temporal bone for a possible causative lesion. The facial paralysis had in each case taken several months to develop and was in that respect totally unlike Bell's palsy. The syndrome is related to the pure pressure effect of epidermoids (as is the case with the intradural variety) and not to the well known septic condition of the ordinary cholesteatoma. The nature of the epidermoids is discussed and the view is held that most, if not all, of the present series were of embryonal origin.

### Journal of Tropical Medicine and Hygiene, London

41: 213-228 (July 1) 1938

- Brief Notes on Cysticercosis and Luetie Pseudocysticercosis. A. Castellani and G. Acanfora.—p. 213.  
Agglutinins for Typhoid and Salmonella Enteritidis in Serum of Individuals Inoculated with Typhoid Vaccine: Enteritidis Mouse Protection as Means of Assaying Effectiveness of Typhoid Vaccines. M. Mollari, R. J. Reedy and W. A. Randall.—p. 218.  
Trypanosomiasis Gambiensi: Some Observations in Uganda and Their Bearing on Prophylaxis. A. A. F. Brown.—p. 220.

41: 229-244 (July 15) 1938

- The First Survey of Ringworm in Egypt. N. Gohar.—p. 229.  
Trypanosomiasis Gambiensi: Some Observations in Uganda, and Their Bearing on Prophylaxis. A. A. F. Brown.—p. 234.

### Lancet, London

2: 61-120 (July 9) 1938

- Seven Gifts. R. Hutchison.—p. 61.  
Diabetes Mellitus: Survey of Changes in Treatment During the Last Fifteen Years. G. Graham.—p. 62.  
Modern Classified Treatment of Varicose Veins. P. Clarkson.—p. 69.  
Irritable Bladder of Chronic Cervicitis. J. Young and A. J. Cunningham.—p. 73.  
\*Antibacterial Action in Vitro of 2-(p-Aminobenzenesulfonamido) Pyridine on Pneumococci and Streptococci. A. Fleming.—p. 74.  
**Bactericidal Action of 2-(p-Aminobenzenesulfonamido) Pyridine.**—Fleming performed experiments to see whether 2-(p-aminobenzenesulfonamido) pyridine has any action on bacteria in vitro and whether any reasonable explanation could be

given of its curative action. The drug has no deleterious action on leukocytes in concentrations up to 1:8,000, which is stronger than is likely to be attained in the body. The use of de-leukocytized blood gives the true antibacterial effect of the chemical, for such blood has no bactericidal power toward the pneumococcus. The test organism was a pneumococcus (type 23). Infected de-leukocytized blood was mixed with equal volumes of various dilutions of the drug in physiologic solution of sodium chloride and incubated in slide cells. In an implant of 100 cocci all the cocci survived and grew out, but there was a definite inhibition of growth as was shown by the size of the colony. In a concentration as low as 1:256,000 the colonies were smaller and in 1:128,000 they were in twenty-four hours only minute. In de-leukocytized blood, therefore, the drug has no power of killing pneumococci, but it has an evident bacteriostatic power even when present only in small amount. Defibrinated blood-containing its full complement of leukocytes was capable of preventing the growth of large numbers of pneumococci. A comparison of experiments with defibrinated and de-leukocytized blood brings out that: 1. Normal human defibrinated blood can prevent the growth of large numbers of pneumococci. 2. If the leukocytes are removed from such blood, all the pneumococci implanted grow out freely. 3. In de-leukocytized blood 2-(p-aminobenzenesulfonamido) pyridine has no bactericidal power but delays the growth of pneumococci. 4. In normal human blood the compound completely prevents the growth of pneumococci even when present only in high dilution. Experiments exactly similar to the foregoing were made with blood and de-leukocytized blood implanted with a group A hemolytic streptococcus ("Richards") and it was found that with hemolytic streptococci, as with pneumococci, the drug does not kill the organisms but delays their growth and (probably for this reason) inhibits the development of hemolysis. In defibrinated blood containing its full complement of leukocytes with an implant of 2,900 "Richards" streptococci per cell there were in the control cell large confluent areas of hemolysis, and it was obvious that a considerable number of colonies of streptococci had developed. In the weakest concentration only four small colonies were visible, and in 1:64,000 no growth occurred even after the cells had been incubated for several days. If blood is rendered "immune" by the addition of some specific immune serum, the apparent effect of the chemical is enhanced. It is suggested that, to obtain the best results with the drug, patients should be immunized actively or passively.

2: 121-178 (July 16) 1938

- Diabetes Mellitus: Survey of Changes in Treatment During Last Fifteen Years. G. Graham.—p. 121.  
Acute Appendicitis Treated by Operation: Record of 1,200 Cases. C. C. Holman.—p. 126.  
Acute Appendicitis: Study of 400 Consecutive Cases Treated by Immediate Operation. I. Aird.—p. 127.  
Heparin and Coronary Thrombosis in Experimental Animals. D. Y. Solandt and C. H. Best.—p. 130.  
\*Postpartum Necrosis of Anterior Pituitary: Effect of Subsequent Pregnancy. H. L. Sheehan and R. Murdoch.—p. 132.  
Sudden Appearance of Senility After an Accident. A. P. Thomson.—p. 135.  
\*Chemotherapeutic Experiments on Virus of Lymphogranuloma Inguinale in Mouse. F. O. MacCallum and G. M. Findlay.—p. 136.

**Postpartum Necrosis of Anterior Pituitary.**—Sheehan and Murdoch encountered fifty-four patients who had only a moderate anterior pituitary insufficiency and certain of these showed a definite improvement without specific treatment. This improvement was sometimes spontaneous and sometimes the result of a subsequent pregnancy. Whereas spontaneous improvement is uncommon and rarely great, there is nearly always a pronounced and often complete recovery if the patient becomes pregnant again. The improvement in the general health is usually quite obvious when the patient is only a few months pregnant. If the delivery is normal the improvement is maintained permanently. Certain conditions, such as retained placenta, which have caused hemorrhage at the original delivery may recur in a subsequent delivery and lead to serious collapse again. If this happens the improvement due to the pregnancy may be partly or completely lost, presumably as a result of a further necrosis. Apart from this obvious cause there are occasional cases in which the condition of the patient does not improve after a normal pregnancy and delivery; it is not clear whether the failure to respond is due to the pituitary itself or



to the related endocrine glands. These are exceptions; the normal result of subsequent pregnancy is a striking symptomatic recovery. The most satisfactory explanation of the improvement appears to be that the part of the anterior pituitary which escaped the original necrosis undergoes normal physiologic hypertrophy during pregnancy but that it does not involute after the delivery to the size that it was before the onset of the pregnancy. The rational treatment of cases of pituitary insufficiency due to postpartum necrosis is to encourage a further pregnancy, despite the natural disinclination of the patient. The utmost care must be taken to avoid any hemorrhage or collapse at delivery; any obstetric complication which can be anticipated must be avoided. Blood donors must be present and all arrangements must be ready for immediate transfusion at delivery.

**Chemotherapeutic Experiments on Virus of Venereal Lymphogranuloma.**—MacCallum and Findlay infected intracerebrally between 200 and 300 mice with two strains of the virus of venereal lymphogranuloma. The compounds employed in treatment have been *p*-aminobenzenesulfonamide (sulfanilamide), which has been given subcutaneously suspended in olive oil, *p*-benzyl-aminobenzenesulfonamide (proseptasinc), given by mouth, and a dextrose derivative of 4:4'-diaminodiphenylsulfone, which has been given both subcutaneously and orally. With both the sulfanilamide and the dextrose derivative a considerable proportion of the treated mice were saved. The first possibility that suggested itself was that some intercurrent bacterial infection was responsible for the death of the control mice and that it was this bacterial infection, rather than the virus disease itself, which was being controlled by the drugs. However, cultures of the brains of control and treated mice failed to show any growth on ordinary bacteriologic mediums, so that the evidence is in favor of the view that it is the virus itself which is being acted on. At present it is impossible to suggest a reason why the virus of venereal lymphogranuloma is susceptible to chemotherapeutic action while so many other viruses are not susceptible. Oakley (1938) found that, provided the virus inoculum was small, the dextrose derivative of 4:4'-diaminodiphenylsulfone had a slight but significant action in curing mice infected with influenza virus.

### Medical Journal of Australia, Sydney

1: 1077-1114 (June 25) 1938

Cerebral Vascular Accidents and Their Treatment. C. T. C. de Crespieny.—p. 1077.

Surgical Treatment of Essential Hypertension: Early Results in Three Cases. G. Phillips.—p. 1081.

Treatment of Head Injuries in General Practice. R. A. Money.—p. 1084.

Some Aspects of Leptospirosis Problem in Australia. W. C. Sowers.—p. 1089.

2: 1-34 (July 2) 1938

The Medical Aspects of Military Science. R. M. Downes.—p. 1.

Expeditious Method of Cutting Bone Flaps in Vault of Skull. H. C. Trumble.—p. 9.

Clinical Significance of Blood Pressure Readings: Postgraduate Lecture. C. B. Blackburn.—p. 13.

\*Injection Treatment of Primary Hydrocele and Spermatocoele. A. G. S. Cooper.—p. 19.

**Injection of Hydrocele and Spermatocoele.**—During the last six years Cooper has treated eight cases of chronic primary hydrocele and two of spermatocoele by injections, with satisfactory results. For the injection, quinine and urethane, quinine dihydrochloride and Morestin's fluid have been employed. The latter solution has yielded the best results. Morestin's fluid consists of equal parts of phenol, glycerin and alcohol. In treatment, the technic consisted of simple paracentesis with a serum needle, aspiration of as much hydrocele fluid as possible, and injection of Morestin's fluid through the same needle, approximately 1 cc. being used for each 20 to 30 cc. of fluid aspirated, up to a maximal dose of 40 cc. A preliminary superficial injection of local anesthetic was always administered. The injected fluid was massaged into every part of the sac of the hydrocele and a suspensory bandage was applied. Almost invariably a secondary accumulation of fluid occurs, and this should be aspirated ten days after the injection, without further treatment. Most of the patients have been under observation for years and no recurrences or other disabilities have been observed or reported. The efficacy of injection treatment in the classic type of long-standing hydrocele with excessively thickened parietal tunica after numerous tapings is doubtful.

### Bruxelles-Médical, Brussels

1S: 1156-1188 (July 3) 1938

Diagnosis of Acute Leukemia. P. Lambin.—p. 1156.

\*Epidemiology and Prophylaxis of Icterohemorrhagic Spirochetosis or Weil's Disease. A. Hougardy.—p. 1163.

Action of Iccoral After Spinal Anesthesia. R. Schockaert and J. Lamillon.—p. 1173.

**Spirochetal Jaundice.**—Hougardy thinks that the physician encountering a case of infectious icterus will more often than formerly think of the possibility of spirochetal jaundice. He reviews the principal elements in the pathogenesis of ictero-hemorrhagic spirochetosis, discussing the animal vectors of *Leptospira* and the part played by water in the transmission. Further, he discusses ictero-hemorrhagic spirochetosis as an occupational disease in sewer workers and miners and the transmission of the disease by pigs, which explains the occurrence of the disease in butchers. He stresses the importance of the supervision of bathing establishments, particularly on rivers, in which protection against rat infestation is essential. He discusses rat proofing of buildings and deratization by mechanical and toxic means. The cooperation of the public should be enlisted.

1S: 1189-1219 (July 10) 1938

\*Several Toxic Volatile Industrial Solvents. D. Glibert.—p. 1189.

Partitioning-off or Exclusion of Small Pelvis from Abdominal Cavity. J. Rouffart-Marin.—p. 1203.

**Toxic Industrial Solvents.**—Glibert thinks that, because of the growing use of volatile solvents in industry, physicians are likely to encounter some of the harmful effects which may be caused by them. There are a great number of these industrial poisons but in this paper the author discusses only the most dangerous and the most widely distributed of the toxic solvents, admitting nevertheless that other volatile solvents have proved injurious under some exceptional circumstances. He does not review in detail the dangers of benzene and of its homologues toluene and xylene since the harmfulness of these highly toxic bodies is well known to physicians. He also omits from this discussion carbon disulfide, the acetone group and others. He gives his attention chiefly to the substances of the ethane and ethylene group; tetrachlorethane, pentachlorethane, dichlorethylene, trichlorethylene and perchlorethylene. He shows that in estimating the toxicity of volatile solvents it is necessary to take into consideration several factors such as the origin, the degree of purity and the instability. He points out that industrial benzene for instance is not a definitely defined substance but is a chemical mixture of varying compositions. Its composition depends in part on the nature of the petroleum from which it is extracted, because some crude petroleum contains more of one kind of hydrocarbons and others contain more of another type of hydrocarbons. The author further discusses the inexactness of the factors on which is based the theoretic evaluation of the toxicity. He shows that the experimentally established toxicity often differs considerably from the one calculated on the basis of a formula and stresses that in estimating the harmfulness of a volatile industrial solvent it is necessary to take into account the particular circumstances under which it is used: the tension and density of the vapor, the temperature necessary for its use, the evaporation in the air, the more or less extended use of the product and the possibility of recuperation for the worker. He discusses in detail each of the aforementioned volatile solvents of the ethylene and ethane group and then classifies these and the other solvents (not discussed) into four distinct categories. Reviewing the literature on this problem, he directs especial attention to the publication of the Medical Research Council on "Toxicity of Industrial Organic Solvents."

### Journal de Médecine de Lyon

19: 415-442 (July 5) 1938

Exploration of Bone Marrow by Sternal Puncture. V. Cordier, P. Croizat and L. Revol.—p. 415.

\*Surgical Treatment of Permanent Arterial Hypertension: Its Indications by Anesthetic Infiltration of Splanchnic Nerves. F. Paliard and P. Etienne-Martin.—p. 433.

**Surgical Treatment of Hypertension.**—Paliard and Etienne-Martin point out that if failures are to be prevented in the surgical treatment of arterial hypertension it is important to determine beforehand whether the surgical treatment will be effective. They briefly review the present status of the surgical treatment of permanent arterial hypertension. They

cite four different types of interventions: (1) adrenalectomy either on one side (left) or partially on both sides, (2) splanchniectomy on the left side, which can be bilateralized for the first and second lumbar ganglions, (3) a mixed operation, that is, adrenalectomy on one side and splanchniectomy on the other, and (4) renal enervation. The authors reject the anterior radicotomies of Adson and Craig, which they regard as too mutilating, as well as thyroidectomy, in which failure seems certain. After pointing out that failures might entirely discredit surgical interventions for hypertension, they describe the clinical histories of three cases in which anesthetic infiltration of the splanchnic nerves caused temporary cessation of the functional disturbances. In summarizing their observations on these three cases they say that the anesthetic infiltration of the splanchnic nerves deserves to be extended in hypertension, because it serves two ends: 1. It has a temporary therapeutic effect in that it counteracts some of the grave subjective symptoms, and if it reduces the hypertension it removes the immediate danger of a grave vascular accident. 2. The greater importance lies in the fact that the infiltration, as a physiologic section of the nerves, helps in deciding the surgical intervention. If this physiologic section of the splanchnic nerves causes a reduction in the tension, the surgical intervention is indicated; if, on the other hand, it fails to do so, surgery is contra-indicated.

### Lyon Chirurgical

35: 385-512 (July-Aug.) 1938

Retrograde Ureteropyelography in Cancer of Kidney. R. Gayet.—p. 385.  
\*Results of Treatment of Certain Articular Fractures by Infiltration with Procaine Hydrochloride and Immediate Active Mobilization. P. Branzén and E. Blum.—p. 417.  
Perforated Ulcers of Stomach and Duodenum. B. Herzberg.—p. 436.

**Procaine Hydrochloride and Mobilization in Articular Fractures.**—Branzen and Blum resorted to infiltration anesthesia only after exact roentgenologic examination of the fracture. In making the infiltration they employ a 1 or 2 per cent solution of procaine hydrochloride without epinephrine. They inject the contents of a syringe of 10 cc. capacity in or near the site of the fracture. The diffused liquid blocks all nervous passages. Contracture and pain disappear instantaneously if the injection is made exactly into the fracture. In the course of the first week the infiltrations are made daily. After that they are given at intervals of two or three days. Depending on the nature of the fracture, the member may be placed in a sling for the first few days or may be left completely free. Staying in bed is necessary only if the fracture is accompanied by such disorders as shock or cerebral concussion. After clinical consolidation is accomplished, the infiltrations are made into the regions indicated as painful by the patients. The authors describe and illustrate the histories of eight cases. The value of this therapeutic method can be estimated by the roentgenograms of the bone lesions and by the photographs of the functional results. As the ideal indications for this method the authors mention (1) the partial fractures of the elbow (epitrochlear, olecranon, head of radius), (2) fractures of the upper end of the humerus in aged subjects, (3) partial fractures of the head of the humerus, complicating the dislocation of the shoulder in patients of all ages, (4) partial fractures of the scapula, (5) fracture of the clavicle without or with slight dislocation in adults and especially in aged persons, (6) fractures at the lower end of the humerus or radius, when reduction is not necessary, especially when the subjects are aged or obese, and (7) fractures of the carpus or metacarpus without dislocation. As regards the lower extremities, the indications for this treatment are rare. However, it has been employed (1) in fractures of the kneecap without dislocation, (2) in certain partial fractures of the tibial disk in aged subjects and (3) in fractures of the tarsus without dislocation and in metatarsal fractures.

### Presse Médicale, Paris

46: 1129-1144 (July 20) 1938

\*Synthesis of Purines in Patients with Gout: Remarks on Effects of Apuric Diet. F. Coste, A. Grigaut and M. Lamotte.—p. 1129.  
Effusions in Extrapleural Pneumothorax. O. Monod, J. Garcia-Bengochea and P. Bruce.—p. 1131.

**Purines in Gout.**—Coste and his associates studied the effects of an apuric diet in patients with gout. They give a list of foods excluded from the diet and a list of permitted

foods. The diet excludes as much as possible all nucleoproteins and purines of animal and vegetable origin. Of the thirty-four patients who were subjected to the diet, some were observed for several years. In the majority of the patients with gout, the plasmatic uricacidemia and particularly the globular uricacidemia was greatly reduced. The regimen, which is referred to as the apuric standard diet, apparently leads at first to a reduction in the excretion of urates in the urine, but when it is prolonged there generally results an augmentation of uraturia in relation to the increased figures before the diet was begun. It was observed in eleven patients that, after from six weeks to twenty-four months of the apuric standard diet, the daily uratic excretion remains rather high. In the majority of cases the apuric standard diet produces a considerable amelioration, provided it is continued for a sufficient length of time. Often the improvement is such that the attacks of gout are completely suppressed. On the whole, the diet is well tolerated; in the majority of patients it produces neither fatigue nor emaciation. It has been demonstrated that adults with gout, when submitted to a diet without purines, continue to synthesize purines in considerable quantities; this does not result in a noticeable impairment of the organism; it must be admitted that there exists in these patients with gout a puric synthesis from the proteins or amino acids contained in the foods or in the tissues. Nevertheless, the restriction of the alimentary nucleoproteins results in an appreciable decline in the plasmatic and globular uricacidemia and in a regression or complete suppression of the attacks of gout. The addition of nucleoproteins of vegetable origin to this standard diet exerts a variable, often a slight influence on the uratic elimination and on the uricacidemia; in one patient it provoked the return of painful crises, in others it was well tolerated. It remains to be determined whether the therapeutic effects of the apuric standard diet results from the suppression of the nucleoproteins and purines or from the suppression of alcoholic drinks or from both these factors. The authors are of the opinion that both factors play a part.

### Schweizerische medizinische Wochenschrift, Basel

68: 901-924 (July 30) 1938. Partial Index

Symptomatology of Tumors of Posterior Cranial Fossa, Particularly of Cerebellum. H. Kräyenhühl.—p. 901.  
New Aspects of Treatment and Prophylaxis of Malaria. M. Mayer.—p. 905.  
Question of Infection of Accidental Wounds. F. Lang.—p. 910.  
\*Clinical Observations in Measles. P. Robert.—p. 914.

**Measles.**—Robert reports observations which he made in the course of an epidemic of measles during the winter of 1936-1937. He gave especial attention to the diagnostic value of the leukocytic blood picture, to the vitamin C metabolism and to the oral bacteriologic flora. He studied the white blood picture in fifty-three patients with typical uncomplicated measles and found that, contrary to the statements in some textbooks, there is no typical blood picture during the exanthem of measles. In one third of the cases studied the classic leukopenia which supposedly characterizes the severest stage was missing. Moreover, in about 50 per cent of the cases it was impossible to detect a disappearance of the eosinophils during the stage of eruption. The appearance of numerous monocytes at the time of the exanthem could be corroborated. The author regards as especially noteworthy in this material the unexpected appearance during the exanthematic period of numerous plasma cells. Since he studied only the diagnostic value of the leukocytic blood picture he disregards the post exanthematic changes in the blood. In fifteen of the patients with measles he made protracted vitamin C tolerance tests and detected a greater or lesser deficit of vitamin C in twelve. He says further that at the clinic in Basel the examination of oral bacteriologic flora is a routine measure at the time of hospitalization and at the time of discharge for all patients with measles and with scarlet fever. It was found that the oral flora of patients with measles is characterized by a predominance of white and yellow staphylococci. There was no essential difference between the oral floras at the time of hospitalization and of discharge, or between the oral floras of the cases with or without complications.

**Semana Médica, Buenos Aires**

45: 117-172 (July 21) 1938. Partial Index

Psychopathologic Study of Emotional Psychoses. G. Bosch and E. E. Krapf.—p. 117.

Grave Uremia from Glomerulonephritis in Children: Cases. J. G. Fernández, M. A. Carri, J. M. Camaña and J. D. Capurro.—p. 123.

\*Specific Reaction to Staphylococcus Toxoid in Diabetes. V. H. Richeri and O. Gómez.—p. 127.

Medical Treatment of Typhoid. F. Arocena.—p. 149.

**Staphylococcus Toxoid in Diabetes.**—Richeri and Gómez state that partial immunity should be induced in diabetes by the administration of staphylococcus toxoid in order to prevent staphylococcal pyogenic infection, which frequently develops in the course of diabetes. They determined the amount of antibodies in the blood serum of seventeen patients who had diabetes before, during and after treatment with staphylococcus toxoid. The treatment consisted of four subcutaneous injections of 0.1, 0.2, 0.5 and 1 cc. of a toxoid preparation of the Instituto Nacional Bacteriológico de Buenos Aires, which were given at intervals of four days. The antitoxic values of the blood serum were shown by the concentration of antibodies in the serum, which were calculated from the inhibition of a standard staphylococcus toxin by the blood serum in the presence of erythrocytes of rabbits used as reagent indicators for hemolysis. The authors found that the mechanism of immunity in diabetes is normal and that the administration of staphylococcus toxoid to the patients stimulates the production of specific antibodies. The immunity induced by the treatment with staphylococci lasts more than three months.

**Chirurg, Berlin**

10: 497-528 (July 15) 1938

\*So-Called Freshening of Wounds According to Friedrich: Primary Suture of Wound or Keeping Wound Open. E. Heller.—p. 497.

Considerations on Evipan Anesthesia (the Sodium Salt of N-Methyl-Cyclo-Hexenyl-Methyl Barbituric Acid). H. Fründ.—p. 501.

Arthrosis Deformans of Knee Joint Caused by Injury with Foreign Body. H. Aile.—p. 505.

Treatment of Basal Pulmonary Abscess. D. M. Juzbašić.—p. 508.

Complete Inversion of Uterus. C. Spyropoulos.—p. 510.

**Freshening of Wounds.**—Heller shows that Friedrich's term "anfrischung" or freshening of wounds has been misunderstood and has led to therapeutic errors. Having worked with Friedrich for many years, he tries to clarify Friedrich's stand and so avoid further misunderstanding. He emphasizes that Friedrich employed suture of wounds only after complete excision, and that in case of incomplete excision he left the wounds open and drained them; that is, Friedrich recommended two ways for the surgical prevention of the infection of wounds: (1) the complete excision with suture of the wounds within the first six hours, in order to prevent an infection, and (2) the open treatment of the wound in which there was danger of infection; that is, in which complete excision was impossible. The author says that whereas the first method is now of slight practical importance, it having been abandoned, the second method is important and is still in use. He thinks that misunderstandings, such as the impression that Friedrich recommended primary suture for incompletely excised wounds, might have been avoided had Friedrich refrained from using the indefinite term "freshening" and had used excision instead. The author shows that, in view of the increasing number of traffic accidents, this problem of the prevention of wound infection is of great importance. He also cites observations that were made during the war, particularly as regards the development of gas edema. He hopes that Friedrich's unfortunate term "freshening," which has become linked with the idea of primary suture of wounds, will be abandoned. This would be no loss, since the method is no longer in use. The term "surgical care of wounds" which is now generally applied is better. To what extent it is necessary to keep a wound open following the surgical toilet, or whether a partial closure is permissible, depends on the seriousness of the injury and on the type of the infection that must be feared. The more severe are the lacerations of the tissues, the more the wound is soiled and the more dangerous is the infectious material, the more urgent it is that the wound remain open; it may even be necessary to open the wound wider. The author further discusses the serologic prophylaxis of tetanus and of gas gangrene, pointing out that seroprophylaxis has replaced antiseptics. The use of

serum for gas gangrene is not reliable as yet and a thorough surgical toilet of the wound is the most important factor in the prevention of gas gangrene. All necrotic portions must be carefully removed. If the work of the surgeon fails in this respect, the efforts of the serologist will likewise be in vain.

**Deutsches Archiv für klinische Medizin, Berlin**

182: 261-372 (July 15) 1938. Partial Index

Changes in Bone Marrow and Hematopoiesis in Diseases of Liver and in Biliary Disorders. W. Tischendorf.—p. 261.

Investigations on Physiology of Gastric Motility: Internal Pressure of Healthy Stomach. K. Goette and K. Grosser.—p. 288.

Urogenital System and Articular Diseases. A. von Dzsinnich.—p. 311.

\*Aspects of Gastritis in Achylia of Pernicious Anemia: Gastroscopic Investigations. K. Lühr and M. Gölzow.—p. 327.

\*Tonsils as Port of Entry and as Localization of Disease in Infectious Granuloma (Hodgkin's Disease). K. Bingold.—p. 338.

Work Test in Electrocardiographic Diagnosis of Angina Pectoris. A. Faleiro.—p. 347.

**Gastroscopic Investigations in Pernicious Anemia.**—Lühr and Gölzow point out that the increased protein content of the gastric juice of patients with gastritis has received considerable attention in recent years. Methods have been developed for the determination of the protein content of the gastric juice and increases have been observed in acute toxic gastritides as well as in a certain number of chronic gastritides. The stomach of patients with achylia has a rich bacterial flora, the digestion takes place under abnormal conditions and often there exists a deficiency of secretion. It was suggested by Katsch that the increased protein values of achylia are partly simulated and partly real. In the achylia concurring with pernicious anemia there nearly always exists an increased protein content and the question arose whether this increase is simulated or whether gastritic changes play a part. The cause of the secretory insufficiency of pernicious anemia is still in dispute; some maintain that the degenerative atrophy of the gastric mucosa is the primary condition, while others ascribe the atrophy to a gastritis. The authors decided to make gastroscopic studies on patients with pernicious anemia, although they are aware of the fact that the increase in the protein content of the gastric juice and the gastritis do not take a parallel course. A review of the literature on gastroscopy in pernicious anemia indicated that a total atrophy of the gastric mucosa is regarded as characteristic for pernicious anemia. The authors subjected a number of patients with pernicious anemia, in whom fractionated withdrawal of the gastric juice had disclosed an increase in the protein content, to gastroscopy. Six of these cases are described in detail. Besides atrophic processes, the authors discovered acute and chronic gastritic processes. The authors agree with those investigators who believe that gastritis plays an important part in the pathogenesis and in the course of pernicious anemia and oppose those who regard a "pure" atrophy of noninflammatory origin as characteristic for pernicious anemia. The gastroscopic observations complement the other material on this problem. The authors think that the increased protein values of the gastric juice of patients with pernicious anemia are probably partly caused by the gastritis.

**Tonsils in Hodgkin's Disease.**—Bingold points out that Hodgkin's infectious granuloma usually develops slowly and insidiously. Swelling of the cervical glands and less often of the axillary and inguinal glands, together with emaciation, call attention to the seriousness of the disease. Whereas hyperplasia of the cervical glands is quite frequent, it has been stated repeatedly that infectious granuloma does not involve the mucosa of the pharynx and of the tonsils. Although it is generally conceded that the port of entry is in the oral cavity, there are authorities who maintain that in Hodgkin's disease, in contradistinction to other lymphocytomas, the tonsils are not involved or that such an involvement is extremely rare. The author, however, observed cases in which tonsillitis and Hodgkin's infectious granuloma did not merely concur but in which the infectious granuloma attacked the tonsils. Moreover, careful anamneses revealed that in some cases a tonsillitis had been the beginning of the infectious granuloma. This tonsillar process may subside again, although some symptoms may remain until the infectious granuloma becomes manifest. The author describes the clinical histories of several cases in which the tonsillar symptoms predominated. In one of the patients

observed by him the characteristic symptoms of infectious granuloma were lacking, and not until the tonsils were subjected to microscopic examination was it possible to determine that the process was an infectious granuloma. The incipient infectious process of the tonsils may subside again, but how often this takes place is not known. Moreover, it is possible that the infectious granuloma is at first only a local disorder. Cases reported by Görke, Putschowsky and Wulstein seem to suggest this, because three years after radical treatment the patients were free from relapse. The author thinks that his observations stress the importance of a careful microscopic examination of extirpated tonsils in order to detect signs of Hodgkin's disease. He hopes that if evidence of this disease is thus found it might be possible to arrest a perhaps still local process by means of radical surgery and energetic roentgenotherapy and prevent a generalization of the disease.

### Klinische Wochenschrift, Berlin

17:1033-1064 (July 23) 1938. Partial Index

- Fat Organs and Their Significance for Metabolism, with Special Consideration of So-Called Brown Fat. W. Eger.—p. 1033.  
Angina Pectoris in Uniovular Twins. G. W. Parade and W. Lehmann.—p. 1036.  
Physiology and Pathology of Intermediate Fat Metabolism. II. G. Krainick and F. Müller.—p. 1040.  
Behavior of Erythrocytes at Platinum Anode. A. Vogl.—p. 1042.  
\*Significance of Gordon Test for Diagnosis of Hodgkin's Disease. H. W. Sachs and W. Steffel.—p. 1043.  
Regarding Production of Hyperglycemia by Means of Cerebrospinal Fluid. E. Fenz and F. Zell.—p. 1046.

**Gordon Test in Diagnosis of Hodgkin's Disease.**—Sachs and Steffel report their experiences with Gordon's test in the diagnosis of Hodgkin's disease. They used Gordon's method of intracerebral injection into rabbits: on material from patients in whom Hodgkin's disease had been histologically demonstrated, on material from patients with disorders other than Hodgkin's disease and on material from doubtful cases. On the basis of their observations they reach the conclusion that when the lymph node is still in the hyperplastic stage, that is, before the development of the typical granulation tissues, Gordon's test is of value for the diagnosis, because it is already positive at a time when the histologic diagnosis is not yet possible. It makes a diagnosis possible in cases in which the only lymph node available for exploratory excision does not yet show the typical granulation tissue. Moreover, it avoids the necessity of repeated exploratory excisions in cases in which, although several lymph nodes are available, the exploratory excision was made on one in which the histologic examination did not yet reveal the typical granulation tissues. However, the authors cite one case of generalized Hodgkin's disease in which Gordon's test was made on one lymph node that showed the histologic aspects of the disease and on one lymph node that merely showed signs of hyperplasia. The hyperplastic lymph node gave a negative reaction in Gordon's test. The authors admit that this one case does not permit generalizing conclusions but suggest that it shows that a definite diagnosis cannot be based on the outcome of Gordon's test, which is made on peripheral, still unchanged lymph nodes, when the disease is restricted to mediastinal or abdominal lymph nodes. For practical purposes the authors advise the use of half an extirpated lymph node for the histologic examination and preparation of the other half for Gordon's rabbit test, which is to be made if the histologic examination should prove negative.

### Medizinische Klinik, Berlin

34:957-988 (July 22) 1938. Partial Index

- Angina Pectoris. W. Weitz.—p. 957.  
Essential Hypoglycemia and Hypotension. G. Graul.—p. 961.  
\*Endemic of Weil's Disease. J. Ehler.—p. 963.  
Relapse Symptoms After Operations on Account of Gastric and Duodenal Ulcers and Their Treatment. H. Finsterer.—p. 966.  
Myasthenic Symptoms and Their Dependence on Endocrine System. W. C. Meyer.—p. 969.  
Vitamin C as Adjuvant in Therapy of Pulmonary Tuberculosis. E. Albrecht.—p. 972.

**Endemic of Weil's Disease.**—Ehler reports observations in the course of an endemic of Weil's disease, which occurred in a community of Czechoslovakia between March and October. Nearly all the patients (twenty-nine) were children of school

age; two of the patients were adults, namely the teacher in the school attended by the children and his visitor. Search for the source of the infection disclosed that the water of the school well must have been responsible for the infections. Signs of infestation with rats were detected around the well as well as on a nearby creek, the polluted water of which probably entered the well by way of an overflow pipe at times when the water level of the creek was high. In eight of the patients who had severe jaundice it was possible to make serologic tests and in all these agglutination with Weil's *Leptospira* gave positive results, whereas agglutination tests with other organisms, such as typhoid or paratyphoid, gave negative results. The complement fixation with *Leptospira* for the demonstration of antibodies likewise produced positive results in all cases. Following remarks about the symptomatology and epidemiology of Weil's disease, the author says that, whenever cases of severe jaundice occur in numbers, Weil's disease should be thought of and a search should be made for *Leptospira icterohaemorrhagiae*. If this organism is discovered, measures can be taken to prevent additional cases.

### Zeitschrift für urologische Chirurgie, Berlin

44:115-182 (July 16) 1938

- Technic of Endovesical Resection of Prostate. W. Staehler.—p. 115.  
\*Changes in Arterial System of Kidneys During Hydronephrosis and Their Relations to Renal Function. K. Egger.—p. 138.  
True Compensatory Hypertrophy of Kidney: Case. R. Riester.—p. 153.  
Rigidity of Sphincter Vesicae in Women. B. Bibus.—p. 159.  
Significance of "Psoas Rim Symptom" of Hutter. A. Stimpff.—p. 165.  
Pathologic-Anatomic Statistics on Pyelonephritis and Pyelonephritic Contracted Kidney. W. Hage.—p. 172.

**Arteries of Kidneys During Hydronephrosis.**—Egger describes the morphologic changes which the arterial system of the human kidney undergoes during hydronephrotic degeneration. He also makes an effort to explain how the circulatory conditions during hydronephrosis act on the function of the kidney. He shows that retention of urine may impair the renal function in that by dilating the calices it strangulates the interlobar arteries and thus produces an ischemia in the renal parenchyma. In the same manner the retention produces an obstruction in the interlobar veins and thus a venous stasis results in the kidneys. Ischemia and venous stasis together with the pressure of the retained urine produce an atrophy of the renal tissues. If the stasis of hydronephrosis is relieved in a cautious manner there is the possibility that the parenchyma which is not yet destroyed will recover, for the increasing blood perfusion may promote a functional and even a partial anatomic restoration of the renal tissues. A too sudden relieving of the hydronephrosis may be followed by a further impairment of the renal function. This is probably due to acute circulatory disturbances, which in turn are produced when large quantities of blood enter a diseased arterial system under high pressure. Neural reflexes may also play a part.

### Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

82:3411-3538 (July 9) 1938. Partial Index

- Gastrojejunal Fistula. C. Mendes de Leon and J. H. Motmans.—p. 3430.  
\*Heredity of Epilepsy. G. P. Frets.—p. 3437.  
Indications for Surgery on Sympathetic Nervous System. W. F. Suermond.—p. 3443.

**Heredity of Epilepsy.**—Frets reports the clinical history of a woman, aged 34, who had had epileptic attacks since her fourteenth year. It was found that a nephew of the woman, as well as an uncle, an aunt and a great aunt, all of them relatives of the father, likewise had epilepsy. Thus it seems that epilepsy was hereditary in the father's family. When recessive heredity is assumed, the mendelian law makes it necessary to assume the presence of the hereditary factor for epilepsy in the mother as well. The hereditary factor for epilepsy may be present without there being evident cases of it in the family. The author further reviews the results of recent investigations on the heredity of epilepsy. He cites Rüdin, van Londen, Luxemburger, Conrad, Franke and others, and he shows that the figures on the heredity of epilepsy are much lower than are those on the heredity of dementia praecox. He emphasizes that the etiology and heredity of epilepsy require further investigation.

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## THE TRAINING OF THE GASTRO- ENTEROLOGIC INTERNIST

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The United States of America is now one of the leading medical centers of the world. Let us not forget in the midst of heated criticisms of present day medical care that we are not the backward child but are the advance guard of efficiency and service in the medical art of the world. The high standards of medical education and practice in this country are due in a large measure to the leadership of the American Medical Association. Advances in medicine during the last half century have been so great that specialization was inevitable. This development has not been an unmixed blessing. Unfortunately, some physicians set themselves up as specialists without sufficient training, and it soon became apparent that a plan for the certification of properly trained clinical specialists was needed. The ophthalmologists were the first to establish a board for the examination and certification of physicians qualified by training and experience to practice that specialty. Now, every major branch of clinical medicine has organized similar boards, and the advantages of this movement are recognized almost universally. Meeker<sup>1</sup> recently stated that the organization of the American Board of Surgery in 1937, the last group of specialists to organize in this way, marks the completion of the first stage of a new epoch in American medicine. He further pointed out that the second stage of this evolutionary process obviously must be the setting up of educational machinery fitted to qualify younger physicians for certification by one of the special boards.

It is not my purpose to describe the various methods which may be used by the gastro-enterologic neophyte in order that he may qualify as a specialist. I prefer to discuss not the means of achieving expertness but rather what expertness in the field implies. How should the gastro-enterologist be equipped mentally? What experience must he possess in order to be qualified as an expert? It soon should become obvious even to the beginner that training in the broad field of clinical medicine is essential. The digestive tract may fre-

quently and initially reflect a functional or pathologic disturbance of any major system of the body. The beginner must realize that gastro-enterology can be entered only through the foyer of internal medicine. There can be no short cut. The use of the term gastro-enterologic internist rather than gastro-enterologist will serve to keep this ever in mind. Therefore our candidate first of all should obtain basic training in internal medicine by one of the many plans which are available. Musser<sup>2</sup> mentioned five: (1) university fellowship, (2) clinic fellowship, (3) hospital residency, (4) preceptorship and (5) formal graduate training. He emphasized wisely, I believe, the assistantship to a reputable internist as a plan which should be open to many and should result in a most satisfactory type of training—if the selection of a preceptor is a wise one. I feel that formal graduate training properly organized by one of the large universities, supplemented by a fellowship, residency or preceptorship, will become the method of preference. No matter which plan is employed, the objective must be sufficient training in internal medicine to meet the requirements for certification by the American Board. Unfortunately, experience in internal medicine does not sufficiently qualify the physician for the special field of gastro-enterology. Advances in the various phases of internal medicine have been so rapid and so extensive that it is no longer possible for the general internist to remain expert in all its subdivisions. Confirmation of this opinion may be found in the personnel of medical departments of most of the leading medical schools. The heads of the departments have associated with them a group of men specially trained in the various subdivisions of medicine. Further proof may be obtained by consulting the current medical literature. Recent advances in our clinical knowledge of any branch of internal medicine emanate usually from workers who are devoting their major efforts to a special field. Gastro-enterology is of wider scope and requires a longer period of apprenticeship than any other subdivision of medicine.

### EQUIPMENT OF GASTRO-ENTEROLOGIC INTERNIST

With this brief introduction I will review the mental equipment which the future gastro-enterologic internist should possess. His training should be sufficiently comprehensive so that he may be considered to have a working knowledge of (1) clinical gastro-enterology, (2) neuropsychiatry, (3) endocrinology, (4) allergy, (5) nutrition, (6) physiologic chemistry of the digestive tract and other clinical laboratory procedures, (7) diagnostic roentgenology of the digestive tract and

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1. Meeker, G. H.: Concerning Norms, Nebulae and Foreign Bodies in Requirements for Clinical Certifications, *South. M. J.* 30: 329 (March) 1937.

2. Musser, J. H.: Opportunities for the Training of Future Internists, *J. A. M. A.* 110: 1328 (April 23) 1938.



(8) certain endoscopic examinations. The first five topics are divisions of internal medicine, and basic training in each of them will be acquired during the period of preparation for certification in internal medicine. I shall briefly discuss them separately in order to stress their importance to the gastro-enterologic student.

1. *Clinical Gastro-Enterology*.—Our candidate must acquire a mastery of the symptoms and signs of all functional and organic disturbances of the digestive tract and its appendages. An intimate daily contact with the various manifestations of acute and chronic disorders under the tutelage of an expert will be necessary. Intelligent history taking assumes a place of major importance in this field. This is the starting point in every case study and if not intelligently carried out may lead one far afield. It is obvious that a good history can be taken only by some one who understands the mechanism of the production of subjective complaints and the manner in which they may be modified by the degree of sensitivity of the patient and his emotional reactions to stimuli. The importance of a good history is further stressed by the fact that abnormalities on physical examination are frequently absent in functional and organic disorders of the digestive tract. Finally, the character of the diagnostic studies in any given case depends entirely on data obtained by the anamnesis and physical examination. When the student physician has acquired the training necessary to the taking of a good history and to its intelligent interpretation, he will be on the right road to expertness in clinical gastro-enterology. Naturally, the manner of eliciting and the interpretation to be placed on the various physical manifestations will be part of the equipment of every internist. It always must be borne in mind that symptoms referable to the gastro-intestinal tract are commonly initiated by disorders in other systems, and the gastro-enterologic internist will see many patients whose primary disturbance is not in the digestive tract. It becomes obvious then that he must be primarily a diagnostician of ability.

2. *Neuropsychiatry*.—Few internists can hope to become expert neuropsychiatrists except by neglecting some other phase of their specialty. This is particularly true of the gastro-enterologist whose training requirements are already so comprehensive. However, he, more than any other type of internist, needs a good groundwork in this subject. The relationship between disturbances of the vegetative nervous system and the psyche frequently contribute puzzling problems for solution. The effect of the emotions on digestion has been proved many times since the pioneer work of Pavlov and Cannon, and clinical examples of somatic disturbances of emotional origin are commonplace. Furthermore, many clinicians consider certain organic diseases of the digestive tract like peptic ulcer and ulcerative colitis to be initiated by, or at least conditioned by, emotional states.

Many patients with a psychoneurosis or neurosis consult the gastrointestinal internist because of conversion phenomena or associated functional disturbances. They must be recognized and disposed of intelligently. Probably the strongest argument for psychiatric training is that it causes one to see the patient as an individual rather than as a case. The psychobiologic makeup of a patient will determine his

reaction to any given disease and may modify materially the response of any plan of therapy which may be applied.

This brings us to a brief mention of the art of medicine. The physician or the psychiatrist who does not acquire this elusive faculty, if indeed it can be acquired, is better suited to research and the laboratory. Without underestimating the importance of research and laboratory training, I cannot refrain from admonishing the prospective internist that such training cannot supplant the clinical bedside and office practice apprenticeship which is essential to expertness in clinical medicine. Some men without this clinical apprenticeship occupy major teaching chairs in our medical schools. Their reputations were established by scientific contributions from the research laboratory. A reputation for ability in research does not imply expertness in clinical practice or fitness for teaching. One of the frequent criticisms made of undergraduate medical training is the lack of adequate instruction in the diagnosis and treatment of functional disorders, which are so numerous. The lack of this type of training in many medical schools is apparent to any one seeing large numbers of graduate students from all parts of the country and it is for this reason that I stress its importance to the prospective gastro-enterologist. William J. Mayo,<sup>3</sup> in making a comparison between medical education in his day and in 1927, remarked: "Teachers in the older schools were proud to practice medicine. They counted wisdom, that is, the application of knowledge, as being of greater importance than the mere accumulation of knowledge. Today medical researches designed to relieve generations yet unborn are looked on as being almost holy in conception, whereas the relief of people who are now miserable and suffering is too often looked on as rather sordid and commercial." He quotes an old Persian proverb: "He who learns and learns and yet does not what he knows, is one who plows and plows yet never sows." Dr. Mayo's aphorisms apply to 1938 as well as to 1927. Research and clinical medicine are equally important and mutually dependent on each other, but one lifetime is hardly sufficient for expertness in both fields. The clinician should and can carry on research in clinical medicine and the laboratory research worker may to advantage keep abreast of developments in medical practice. However, if the clinician dabbles in laboratory research or the laboratory research worker in clinical medicine per se the results often are not illuminating. A liaison between the two is ideal and usually productive of noteworthy results. The beginner in medicine should choose the field to which he is most suited and train himself accordingly.

3. *Endocrinology*.—Although there is a certain degree of autonomy in gastrointestinal function, the endocrine glands unquestionably exert an important influence. Their action may be exerted through the blood supply directly or by way of the vegetative nervous system. Although specific proof of this effect is often lacking because of the complexity of the endocrine apparatus, clinical manifestations of alimentary tract dysfunction of endocrine origin are commonly encountered. One need cite only the frequent disturbances related to puberty, menstruation and the climacteric, particularly

3. Mayo, W. J.: Medical Education for the General Practitioner. J. A. M. A. 8:1377 (April 30) 1927.

the latter when artificially induced. The disturbances in gastric secretion and in gastrointestinal motility in hyperactive thyroid states are well known. Hypothyroidism is not infrequently associated with symptoms and signs of a neuromuscular imbalance of the digestive tract. Other well developed endocrinopathies have been accredited with causing aberration in the functioning of the digestive tract, but clinical observations are far in advance of actual experimental proof in many instances.

Evidence is accumulating to suggest that some of the more common gastrointestinal diseases may be directly or indirectly dependent on an endocrine influence. Sandweiss, Saltzstein and Farbman<sup>4</sup> recently reported that 80 per cent of Mann-Williamson dogs had their peptic ulcers prevented, healed or healing by the use of injections of antuitrin-S, whereas twelve untreated (control) dogs died with typical jejunal ulcers. This work, if substantiated, offers an explanation for the clinical observation of Sandweiss and others that pregnancy has a beneficial effect on peptic ulcer and adds further support to the relationship between the pathogenesis of peptic ulcer and endocrine function. I have noted patients in a quiescent stage of ulcerative colitis go into a relapse during pregnancy, and the frequent development of cholelithiasis following pregnancy may depend on a disturbance of bile chemistry, brought about by some hormonal influence.

There are many reasons to feel that endocrinology, a dubious child in the family of internal medicine, may mature into the most influential member of the family, by offering the solution to the pathogenesis of many gastrointestinal and other disorders. Future clinical research in gastro-enterology will unquestionably lead more and more into the field of endocrinology. Surely sufficient reasons have been advanced to stress the importance of securing a basic knowledge of endocrinology.

4. *Allergy*.—The laboratory and clinical training of the gastro-enterologic internist must result in a familiarity with immunology and allergy. Not only does allergy initiate many gastrointestinal disorders but it conditions and complicates many others. A failure to give due attention to the telltale family history, the food idiosyncrasies, the existence of a concomitant allergic state, the eosinophilia, and the effect of vaccines and serums will at times result in an erroneous diagnosis and therapeutic failure. A woman giving an atypical ulcer history, subject to attacks of hay fever and asthma, was recently admitted to the Graduate Hospital with practically complete pyloric obstruction. The stomach was tremendously dilated and retained a large part of the barium sulfate meal for twenty-four hours. A marked eosinophilia suggested an active allergic state. A diet restricted to milk resulted in quick relief and a normally emptying stomach in two weeks. The very rapid disappearance of the obstruction and of the eosinophilia suggested that the allergic factor was of paramount importance. This was substantiated by subsequent study. There can be no doubt of the significance of allergy as a conditioning if not an initiating influence in many patients with the "irritable" colon,

ulcerative colitis and peptic ulcer. No one with clinical experience will deny that our candidate must be at least an amateur allergist.

5. *Nutrition*.—Diet, always an important aid in the therapy of disorders of the digestive tract, becomes more and more valuable as our knowledge of nutrition grows. Its scientific application is of the greatest importance to the gastro-enterologic internist. Primary nutritional disturbances are not rare; their coexistence as complicating influences in many diseases of the alimentary tract is commonly observed. Deficiencies in vitamins, minerals, electrolytes and proteins, singly and in various combinations, render the functioning of the digestive tract abnormal. Conversely, obstructive and inflammatory lesions of the tract are frequently responsible for faults in the ingestion, absorption and utilization of elements essential to health and directly account for deficiencies of various types. The contributions of Minot, Castle, Strauss and others have placed an entirely new interpretation on the anemias, in proving their direct relationship to an aberration of function of the gastrointestinal tract. The accumulated evidence of the interrelationship between the functions of the liver, spleen, bone marrow and digestive tract makes it necessary for the gastro-enterologist to be well grounded in hematology. The science of nutrition is a fruitful field for investigation for the young physician. The portals have just been opened and one of the weakest links in our knowledge of nutrition is its correlation with function of the digestive tract. The gastro-enterologist should be better equipped to fill in this gap than any other type of internist.

6. *Physiologic Chemistry and Other Clinical Laboratory Procedures*.—Gastro-enterology makes greater demands on the chemical and clinical laboratories than any other specialty. The alimentary tract and its complementary organs comprise the important chemical laboratory of the body, so that a thorough training in chemistry constitutes a splendid background for the gastro-enterologist. Such knowledge is essential to an understanding of the physiology of the system and an application of functional tests to the various organs of which it is composed. The functions of the stomach, liver, pancreas and bowel are being subjected to the closest scrutiny and the steady increase in the number of functional tests is constantly augmenting our knowledge of gastrointestinal disturbances. A review of the advances which have occurred in the study of liver function alone since the paper of Rowntree, Hurwitz and Bloomfield<sup>5</sup> in 1913 would astound the modern Rip Van Winkle in medicine. The progress in this field will be remembered by students of the subject merely by mention of the names of Mann, Bollman, Van den Bergh, Whipple, Rich, McMaster, Elman, Rous, Rosenthal or Bauer. These men have laid the foundations. The building remains to be constructed by the alimentary expert of the future. Our student should not neglect the microscope. He must be familiar with the magnified appearance of sediment contained in the various secretions and excretions. A differential diagnosis may hinge on his qualifications for the recognition of certain pathologic elements. Laboratory training likewise will embrace instruction in the recognition of intestinal parasites.

4. Sandweiss, D. J.; Saltzstein, H. C., and Farbman, Aaron: The Prevention or Healing of Experimental Peptic Ulcer in Mann-Williamson Dogs with the Anterior Pituitary-like Hormone, *Ann. J. Digest. Dis.* 5: 24 (March) 1938.

5. Rowntree, L. G.; Hurwitz, J. H., and Bloomfield, A. L.: *Bull. Johns Hopkins Hosp.* 24: 327, 1913.

7. *Röntgenology*.—The intelligent application of fluoroscopy and roentgenography constitutes the most valuable aid in the diagnosis of motor dysfunction and of organic disease of the alimentary tract. The neophyte will obtain ideal training by associating himself with a roentgenologic expert in gastrointestinal diagnosis who is working in close collaboration with a gastro-enterologist expert in film interpretation. The application of the roentgen diagnosis to clinical problems is the duty of the internist. He alone can muster all the pertinent diagnostic data and should be capable of expert interpretation of the roentgen appearances.

8. *Endoscopy*.—Both ends of the digestive tube can be directly inspected with appropriate instruments. With the introduction of the flexible Wolf-Schindler gastroscope it becomes possible to diagnose more accurately certain diseases of the gastric mucosa. There can be no doubt of the value of this examination in some cases and it should become the most reliable if not the only accurate method of diagnosis of gastritis. However, the instrument has not been used for a sufficient period of time by enough experienced observers to appraise its scope of usefulness. Clinicians are on the threshold of assigning greater clinical importance to chronic gastritis. As gastroscopy becomes more generally adopted, this diagnosis may become even more popular than its importance deserves; but finally it will be assigned to its proper place, and a better understanding of many stomach lesions will undoubtedly result. The gastro-enterologic student should receive training in the use of the gastroscope and be alert to its possibilities, bearing in mind that it is a rather uncomfortable experience for most patients to undergo and consequently that it should be utilized only when definite indications are present.

The lower 10 inches of the intestine can be rather easily inspected with a sigmoidoscope of narrow lumen. Lesions in this region can be diagnosed with certainty by its use. The examination is easily carried out as an office procedure without anesthesia and with very little discomfort. Every patient with symptoms referable to the colon should be subjected to sigmoidoscopy, and every gastro-enterologic internist should be an expert sigmoidoscopist.

#### SUMMARY

I have attempted to point out that the specialist in disorders of the digestive tract must be first of all an internist. He should obtain the same general training as any other student of internal medicine. In securing this broad training, particular attention should be devoted to neuropsychiatry, endocrinology, allergy and nutrition. He will then be particularly suited to an apprenticeship in clinical gastro-enterology, entailing many special laboratory procedures, diagnostic roentgenography and endoscopy. This is a formidable program. It will be possible of accomplishment for large numbers of physicians when clinical curriculums are arranged by graduate departments of our leading university medical schools. If any physicians are dissuaded from going on it is better so, for it is not a specialty for the weak of heart or the indolent. If others are encouraged to go on I am glad, for they will be of the material from which gastro-enterologists should be made.

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## PELLAGRA AND NICOTINIC ACID

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During the early period of investigation of vitamins Funk demonstrated that nicotinic acid is a constituent of the vitamin B complex. At a later date Elvehjem and his collaborators<sup>1</sup> in their search for the anti-pellagra factor isolated nicotinic acid from highly active concentrates and found that a commercial preparation of this compound was highly effective in curing canine blacktongue. By analogy it was suggested that clinical trials should determine whether nicotinic acid would be equally effective against human pellagra.<sup>2</sup> More or less recently Spies and Smith and their colleagues, and others<sup>3</sup> as well, have demonstrated convincingly the highly effective role of nicotinic acid in the treatment of pellagra. In this section of the United States, where pellagra has often assumed the proportions of a major medical and psychiatric problem, the reports of their work and the results of local experiments produce the impression that a conspicuous advance has been made in the treatment of pellagra.

Since April 30, 1938, sixteen cases of pellagra have been studied in the divisions for white male and female patients at the South Carolina State Hospital. These cases presented various clinical representations of the pellagra syndrome. Fourteen were cases of endemic type and two presented pellagra superimposed on cardiovascular-renal disease. The first six patients to receive nicotinic acid were either considered too ill to permit experimentation with the diet or had been on the traditional treatment for a prolonged period and had failed to recover. During their period of study they received the routine hospital diet without additions, and nicotinic acid. All exhibited prompt improvement and progressed to recovery without interruption. One patient having severe central and peripheral neuritis responded to vitamin B<sub>1</sub> therapy. Four patients, all white women having endemic pellagra, were next admitted and fed a pellagra-producing diet over a preliminary period of observation varying from eight days to one month. Two of these control patients experienced complete remission from pellagra and were paroled at the end of one month, having received no medication and only the control diet. In the other two control cases the condition became progressively worse. Each showed chiefly a marked intensification of the mental and nervous manifestations, one at the end of eight days and the other after twenty-one days. Both patients improved promptly and progressed to recovery when nicotinic acid was administered, the diet remaining unchanged. Six patients were next admitted and placed on the pellagra-producing diet and given nicotinic acid. Three of these patients were severely ill, two having pellagra secondary to a severe cardiovascular-renal condition. One of the two died of heart failure at the end of seven days. Five of the six patients showed

1. Elvehjem, C. A.; Madden, R. J.; Strong, F. M., and Wooley, D. W.: Relation of Nicotinic Acid and Nicotinic Acid Amide to Canine Blacktongue, *J. Am. Chem. Soc.* 59: 1767 (Sept.) 1937.  
2. Relation of Nicotinic Acid to Human Pellagra, editorial, *J. A. M. A.* 109: 1293 (Oct. 9) 1937.  
3. Spies, T. D.; Cooper, Clark, and Blankenhorn, M. A.: The Use of Nicotinic Acid in the Treatment of Pellagra, *J. A. M. A.* 110: 622 (Feb. 26) 1938. Smith, D. T.; Ruffin, J. M., and Smith, Susan G.: Pellagra Successfully Treated with Nicotinic Acid: A Case Report, *ibid.* 109: 2054 (Dec. 18) 1937. Spies, T. D., and Aring, C. D.: The Effect of Vitamin B<sub>1</sub> on the Peripheral Neuritis of Pellagra, *ibid.* 110: 1081 (April 2) 1938. Sullivan, D. J., and Simon, A.: Vitamin Deficiency as an Etiologic Factor in Central Neuritis, *M. Bull. Vet. Adm.*, p. 228.

prompt and unequivocal improvement on the control diet plus nicotinic acid from 500 to 1,000 mg. daily, and recovery was completed on a well balanced diet and nicotinic acid.

#### MATERIALS AND METHODS

A 1 per cent aqueous solution of nicotinic acid was prepared with Merck's nicotinic acid powder; each cubic centimeter contained 10 mg. of the acid. For the purposes of parenteral administration this solution was sterilized and given intramuscularly undiluted or was added to parenteral infusions in quantities up to 100 mg. It was also determined by experience that the sterile 1 per cent aqueous solution could be given intravenously in 10 cc. doses and was well tolerated over a long period of time. For oral administration the nonsterile 1 per cent aqueous solution was given, diluted with a little tap water. The average single dose by mouth was from 100 to 200 mg., or from 10 to 20 cc. of the 1 per cent solution. Nicotinic acid in tablet form supplied by John Wyeth & Brother, Inc., was tried and found to be efficacious. Regardless of the method of administration the desired effects were obtained, but for the sake of economy a solution was prepared in our laboratory as described and easily given then to suit our convenience. The same reactions to the acid that others have described, namely, transitory flushing and tingling or stinging, were observed but in most instances ceased to occur after the patient had been under treatment for several days. The maximum daily amount given was usually 1,000 mg., and in no instance were ill effects of any kind observed other than the transitory flushing and stinging of the skin.

Cases presenting "central neuritis" and peripheral neuritis were treated with synthetic vitamin B<sub>1</sub>. For the most part this was given intravenously or intraspinally. The daily dose varied between 10 mg. and 40 mg. In one instance 100 mg. was given intraspinally on three successive days to a very ill patient, and unmistakable improvement followed in both the neurologic and the mental picture.

The control diet used in this study was composed of hominy grits with gravy made from pork fat, corn bread, or wheat bread on days when corn bread was not obtainable, rice, potatoes, molasses, coffee with sugar, and pork fat.

#### REPORT OF CASES

The following cases are representative of our recent experiences at the South Carolina State Hospital with pellagra, nicotinic acid and synthetic vitamin B<sub>1</sub>:

**CASE 1.—History.**—A. S., a white woman aged 51, a saleswoman and housewife, admitted to the state hospital Jan. 25, 1938, gave a history of a severe attack of pellagra six years previously from which she recovered after nine weeks of treatment. The present illness began in January with anorexia, constipation, pain and weakness in the lower extremities, insomnia and premonition of impending disaster. Two weeks prior to admission, delusions, hallucinations and suicidal tendencies were exhibited.

**Examination.**—The patient entered the hospital highly excited, disoriented and confused, screaming and clapping her hands continuously. Her weight was 131 pounds (59 Kg.) and her complexion sallow; there was marked dehydration, and the tongue and buccal membranes were scarlet and covered with patches of white exudate. The gum margins were inflamed, and a symmetrical dermatitis with pigmentation and fissuring involved the skin of the dorsum of the forearms, hands and feet. A profuse diarrhea existed. The remainder of the examination was unsatisfactory and revealed nothing essential. The left foot

presented marked talipes equinus, a sequel to a chronic ulcer of the leg six years previously. The hemoglobin content was 63 per cent Sahli, the erythrocyte count was 4,130,000 and the size and appearance of the cells were normal. The total and differential leukocyte counts were normal. The urine contained a trace of albumin, and the blood urea was 60 mg., the creatinine 1.3 mg. The Wassermann reaction of the blood was negative. The rectal temperature was 100.2 F. and followed an irregularly elevated course.

**Progress.**—It was necessary to restrain the patient in the continuous bath for four weeks. Barbiturates, scopolamine and packs were required at night to combat exhaustion. The routine hospital diet was given by forced feeding. Nausea, gastric distress and rectal pain were complained of. At the end of four weeks, though still in a profound psychotic state, she was quiet enough to permit discontinuance of the bath. For the next two months she received, invariably by forced feeding, a pellagra-preventive diet of high potency, brewers' yeast, liver extract, tablets of vitamin B and G concentrate, tonics and antidiarrheals. At the end of one month of such treatment the dermal and mucosal lesions and diarrhea had disappeared, but dementia persisted as blind confusion and fear, hallucinations, self-accusatory delusions and resistiveness. She suffered extreme anorexia and poor alimentary function. Severe crural neuritis and less severe sciatic neuritis involved both legs. There was intense pain along the course and distribution of the anterior crural nerve and in the flexure of the groin. Intense pain radiated down the inner surface of the leg to the ankles. The extensors of the thigh were weak and the knee jerks were lost. There was pain over the sciatic notch and on deep pressure posteriorly in the muscles of the thigh and calf. The soles of the feet showed hyperesthesia and hyperalgesia, and paresthesias were present in the toes. The right leg was predominantly involved, swollen and pallid from the hip to the toes. The temperature followed a low grade febrile course. At the end of the second month of traditional treatment the patient was bedridden, lay on the right side with the legs flexed at the knees and was fixed in this position by rigid contractures. The size of the right leg had returned to normal. There were slowly granulating decubitus ulcers on each heel. She was exceedingly averse to any change of position. The mental picture was that of resigned inactivity, fear and lack of insight. She frequently responded to hallucinations. Forced feeding was the rule, and the taking of food was obviously an ordeal.

April 20, all the foregoing regimen was discontinued and the patient was placed on the routine hospital diet, without additions, and nicotinic acid. For seven days she received 300 mg. orally and 70 mg. either intravenously in 500 cc. of physiologic solution of sodium chloride or intramuscularly as a sterile 1 per cent aqueous solution. The first significant change occurred on the seventh day, when the patient appeared entirely rational and spontaneously reported an excellent appetite. The temperature had returned to normal. She received thereafter 500 mg. of nicotinic acid by mouth daily and the routine hospital diet. At the end of twenty-one days of nicotinic acid therapy there had been uninterrupted progress to recovery, which appeared complete both mentally and physically with the exception of contractures at the knees, the sequel to peripheral neuritis. The patient remained in the hospital solely for the orthopedic correction of this condition and the old talipes equinus.

**CASE 2.—History.**—K. S., a white woman aged 29, a housewife, was brought to the hospital May 6, 1938, in a state of incoherent delirium. She had had recurrent pellagra each spring for ten years. Severe mental symptoms had not been observed in previous attacks. The present illness began during the spring of 1938, with general weakness, typical cutaneous lesions on the arms and legs, soreness of the mouth and tongue and obstinate constipation. Because of gastrointestinal symptoms, food had been taken squeamishly. One week prior to hospitalization acute maniacal attacks appeared, with terrifying delusions and hallucinations.

**Examination.**—The patient entered the hospital delirious and was difficult to manage. On examination she was very ill, emaciated and dehydrated, with typical dermal residuals on the dorsum of the hands and feet and over the elbows. The tongue

was beet red and the tip and edges were smooth. The buccal membranes and pharynx were fiery red and patches of white exudate could be seen. Vaginitis and severe proctitis were present; the patient was menstruating. There were gaseous distention of the abdomen and a severe diarrhea. The rectal temperature was 102.8 F., the pulse rate 130 and the respiratory rate 25. Satisfactory neurologic examination was impossible. The only significant laboratory finding was that of severe anemia, with hemoglobin content 38 per cent Sahli and erythrocytes 2,520,000. Repeated total and differential leukocyte counts were either normal or showed a mild polymorphonuclear leukocytosis. The blood Wassermann test, analysis of a catheterized specimen of urine, blood culture, examination of the stool and of the spinal fluid, blood smears for malaria and x-ray studies of the chest and bony system gave negative results. The estimation of bromide in the blood was 75 mg. The patient was gravely ill for several days and at times appeared moribund. She presented the clinical picture once described as "typhoid pellagra," with continuous high temperature with irregular fluctuations, rigidity of the legs, twitching of the arms, carphology and blind general excitement. The rectal temperature reached 107 F., the pulse becoming at times barely perceptible.

*Progress.*—Exhaustion was combated by large doses of sedatives; once the patient relaxed only after the intravenous administration of 1 1/4 grains (0.76 Gm.) of sodium amytal with 3/5 grain (0.001 Gm.) of scopolamine subcutaneously. At times the regular hospital diet was taken fairly well by forced feeding; at times it was refused. Repeated administration of fluids and dextrose was necessary for four days. Nicotinic acid therapy was begun the day following admission, 1,000 mg. being given orally in five daily doses, supplemented by the inclusion of 100 mg. in the parenteral infusions. At the end of twenty-four hours glossitis and stomatitis had disappeared and the redness in the pharynx had perceptibly diminished. The oral mucous membranes were clean. On the fourth day the patient began to experience relative mental calm during several hours each day; diarrhea had almost ceased, but high fever and intermittent dementia persisted, with extreme psychomotor excitement at night. On the seventh day of treatment the patient appeared entirely rational and remained thus, the appetite was good and the routine diet was well accepted; the temperature was nearly normal. Proctitis, vaginitis and the other evidences of the pellagrous element, including the dermal residuals, had disappeared, and the patient seemed to be on the road to recovery. Four days later she complained bitterly of pain in the left hip and posteriorly in the left thigh. The temperature rose again to 104 F., and in the course of a few days swelling appeared on the inner surface of the thigh below the flexure of the groin, with intense pain in the muscles and tendons, and posteriorly in the muscles of the thigh and calf, over the sciatic notch and in the popliteal space. The leg was held in flexion, and pitting edema appeared over the tibia, ankle and foot. The knee jerk was hyperactive, ankle clonus was inexhaustible and hyperalgesia and hyperesthesia were present below the knee and over the sole of the foot. The Babinski, Oppenheim and Gordon reflexes were absent. The ankle jerk was absent. Twelve days of continued nicotinic acid therapy, 1,000 mg. daily, did not seem to affect the course of the neuritis or the associated high fever. The patient called constantly for cracked ice, complained of "pain in all her bones," and required large doses of codeine, salicylates and barbiturates. On the twelfth day of this neuritic condition she refused solid foods and was semidelirious with pain. During the next nine days she received daily 12 mg. of thiamin chloride intravenously. Symptomatic relief followed the second dose, and analgesics were no longer necessary. On the ninth day the left leg was essentially normal and the neurologic signs had disappeared. The temperature returned practically to normal for three days and again the patient seemed to be on the road to recovery. Then, in spite of continued vitamin B<sub>1</sub> and nicotinic acid therapy, and a high caloric, high vitamin diet, the temperature rose to 104.2 F., pain began in the right hip, and during the next fifteen days the right leg repeated in all details and with the same neurologic manifestations the course through which the left had passed. The first eight days of this period saw the administration of 12 mg. of thiamin chloride intravenously with moderate amelioration

of the symptoms. Then 10 mg. of thiamin chloride was given intraspinally for seven days. Improvement was strikingly accelerated after the second dose, and at the end of seven days the right leg had returned to normal. Thiamin chloride was continued intramuscularly. The temperature returned to normal three days later and the patient was relieved of all symptoms.

*CASE 3.—History.*—B. B., a white woman aged 34, a housewife, admitted to the hospital Feb. 15, 1938, gave a history of recurring attacks of pellagra every spring for eleven years, which attacks had become more severe in recent years. The history of the present illness is unreliable but suggests that profound depression preceded or accompanied the appearance of pellagra.

*Examination.*—When first seen the patient was blindly excited, resistive and totally uncooperative. The limbs showed marked resistance and increased tonus. The general picture, except for its variability, was that of catatonic resistiveness. The arms were held extended above the bed and exhibited subulnar tendinism. Emaciation and dehydration were pronounced; she weighed 99 pounds (45 Kg.). The oral mucous membranes were fiery red, the gums inflamed and bleeding. Salivation was profuse. The skin of the face, neck and dorsum of the hands, forearms and feet showed pigmentation, keratosis and fissuring. The heart tones were rapid; the blood pressure could not be estimated. The rectal temperature was 99 F., pulse rate 100, respiratory rate 20. Constipation was present on admission, followed by profuse diarrhea one week later. Laboratory examinations were not contributory.

*Progress.*—For ten weeks the patient remained very ill and in a psychotic state throughout. By forced feeding a highly potent pellagra-preventive diet was given, with liver extract parenterally, brewers' yeast and tonics. Antidiarrheals partly controlled diarrhea. Feeding by tube was frequently necessary. At the end of ten weeks the patient lay on her side in bed, with the knees flexed beneath her and the mouth held constantly open, excessive saliva drooling on the pillow. She was unresponsive to verbal stimuli and entirely mute and required every nursing care. Dermatitis and diarrhea had disappeared, but mild glossitis and stomatitis persisted. The gums were foul and several teeth were loose. She had lost 9 pounds (4 Kg.). Urinary and rectal incontinence existed. Forced feeding was necessary. All medicinal and dietary measures were now discontinued and the patient was placed on the routine diet of the hospital. For three days she received 120 mg. of nicotinic acid intramuscularly, and on the third day she began to eat well alone and unassisted. On the fourth day she received 240 mg. intramuscularly; glossitis and stomatitis had disappeared and salivation was almost normal. She was eating well and showed a reviving interest in her surroundings; she left the bed without permission and utilized bathroom privileges for the first time. Thereafter she received 500 mg. daily by mouth and there was a striking return to her normal mental condition by almost successive stages, with progressive disappearance of negativism, disorientation, delusions and faulty insight. At the end of fourteen days of nicotinic acid therapy the patient appeared essentially normal mentally and physically, and four days later, with relief of symptoms, parole was granted.

*CASE 4.—History.*—Miss L. C., a white woman aged 44, a housekeeper, was admitted to the hospital April 8, 1938, with no previous history of pellagra. The history was unreliable but described the onset of the present illness with weakness, nervousness, loss of appetite, nausea, urinary incontinence, and roughening of the skin of the dorsum of the feet, hands and forearms. She became resistive and assaultive prior to admission.

*Examination.*—The patient entered the hospital in an extremely dull and apathetic condition, totally disoriented, confused and uncooperative. She was emaciated and dehydrated and weighed 85 pounds (38.6 Kg.). The mucous membranes of the mouth were intensely red and the lips fissured. A bilaterally symmetrical erythema with beginning keratosis involved the skin of the dorsum of the hands and feet and over the elbows. Severe diarrhea was present. There was a low grade fever. The knee jerks were hyperactive. Laboratory examinations were not significant.



*Progress.*—For three weeks the mental condition exhibited periods of dulness and apathy alternating with excitement and confusion. An occasional brief interval of apparent lucidity occurred at first. For the first three weeks she received a pellagra-preventive diet of high potency, liver extract, brewers' yeast, antidiarrheals and sedatives for excitement. The diarrhea ceased and food and medicine were taken fairly well, but the cutaneous lesions and dementia persisted. The patient lay in bed in a state of settled gloom, with total disregard for her surroundings. Progress seemed to be at a standstill. April 30 the special diet and medicines were discontinued and the patient received the regular hospital diet and 60 mg. of nicotinic acid intramuscularly. Then for fourteen days she received 500 mg. orally and 60 mg. parenterally, with alternation of the intravenous and intramuscular routes. There was a concomitant improvement in the mental and physical condition, with perceptible change almost daily. May 14 the patient was ambulatory, entirely lucid, cheerful and eager to return home. Appetite and digestion were excellent and she had gained several pounds. The cutaneous lesions receded during the first week of nicotinic acid therapy. Parole was granted with relief of symptoms May 23.

*CASE 5.—History.*—M. G., a white woman aged 45, a housekeeper, admitted to the hospital April 29, 1938, had had recurrent pellagra for several years. During the past three or four years pellagra had recurred each spring with weakness, anorexia, typical symmetrical dermatitis, sore mouth, alternating constipation and diarrhea, and unsteadiness in the legs. The present attack began shortly after Christmas 1937 with generalized weakness, loss of appetite, constipation, nausea, sore mouth, excessive salivation and reddening, fissuring and bleeding of the skin of the dorsum of the hands and feet. A few days prior to hospitalization self-accusatory delusions developed with nocturnal restlessness and excitement, and it became necessary to bring the patient to the state hospital.

*Examination.*—On admission the patient was exceedingly irritable and agitated but approximately clear mentally. She was unable to walk or stand unassisted and stated that she had not done so for months. Significant was the fiery red, swollen tongue, with small ulcers on the inferior surface. The gums were inflamed and swollen. The buccal membranes and pharynx were scarlet and ptialism was evident. The skin of the dorsum of the hands and feet was keratotic and fissured. There were gaseous distention and generalized tenderness of the abdomen, and proctitis was present. The patient complained bitterly of nausea. The knee kicks were hyperactive and the muscles of the lower extremities were atrophied and flabby. The soles of the feet showed hyperesthesia and hyperalgesia, but no further neurologic examinations were made. The temperature, pulse and respiration were normal; blood pressure was 100 systolic, 80 diastolic. Laboratory examinations gave negative results.

*Progress.*—The patient was given the regular hospital diet and for three days received 80 mg. of nicotinic acid by the intramuscular route. Twenty-four hours after the first dose she reported diminution of pain in the mouth, and ptialism had ceased. The oral and pharyngeal membranes had blanched perceptibly. Depression and extreme irritability persisted, and forced feeding was necessary. On the fourth day the dose was changed to 500 mg. orally and 60 mg. intramuscularly. Stomatitis, glossitis and pharyngitis had practically disappeared, the mental attitude was less despondent, and improved appetite was noted. On the seventh day of nicotinic acid therapy the tongue, buccal membranes and pharynx appeared normal, the appetite was good and the mental attitude was cheerful and cooperative. Nicotinic acid was continued by mouth, 500 mg. daily, and on the sixteenth day of treatment the patient was ambulatory, the appetite was voracious, and gastrointestinal function was normal. The dermal lesions of the hands and feet disappeared gradually. Convalescence continued in the hospital for nine days more, and the patient was sent home symptom free.

*CASE 6.—History.*—E. A., a white woman aged 35, a housekeeper, admitted to the hospital May 7, 1938, gave a history of recurrent pellagra in the spring for the past nine years. The present illness began during the latter part of March with anorexia and loss of weight, soreness of the mouth and tongue, alternating diarrhea and constipation, and the appearance of

the typical rash. Restlessness, suicidal tendencies and intermittent attacks of mental excitement supervened and the patient was brought to the state hospital.

*Examination.*—On admission the patient was irritable and despondent but otherwise clear mentally. She was quite weak and unsteady and somewhat underweight. The essential physical manifestations were symmetrical, erythematous lesions of the face and neck, and the tip, edges and inferior surface of the tongue were fiery red, smooth and painful. The pharynx was red. The skin of the dorsum of the hands and feet and over the elbows and tibias was leathery and pigmented and the epidermis exfoliating. The gums were inflamed and discharging. The remainder of the examination revealed nothing of significance, and the laboratory examinations were noncontributory with the exception of the estimation of the bromide content of the blood, which was 125 mg.

*Progress.*—Following admission, the patient received 100 mg. of nicotinic acid intravenously in 500 cc. of physiologic solution of sodium chloride and 500 mg. orally in five doses at hourly intervals. At the end of seven and one-half hours glossitis, stomatitis and swelling of the tongue had perceptibly diminished and the patient reported improved sensation in the mouth. No food had been taken during this time. At the end of twenty-four hours glossitis, stomatitis and pharyngitis had subsided and the mouth was not painful. Constipation and pyrosis persisted but the routine hospital diet was well taken and appetite was obviously improved. Nicotinic acid therapy was continued orally, 500 mg. a day, and at the end of eight days the patient showed relief of all symptoms of a pellagrous nature. The condition of the gums was much improved. There was visible gain of weight and the patient reported that she "stayed hungry." Parole was granted a few days later.

*CASE 7.—History.*—C. O., a white woman aged 32, a housewife, was a patient in the state hospital in 1929 with pellagra and psychosis, paroled at the end of three months when she had recovered. Three subsequent attacks of pellagra occurred prior to the onset of the present illness, which began in the spring of 1938 with loss of appetite, soreness of the mouth, tongue and vagina, pyrosis and constipation, and the typical red rash on the hands and legs. Two weeks prior to commitment, mental symptoms appeared in the form of terrifying delusions and hallucinations, and the patient became uncontrollable.

*Examination.*—She was admitted to the hospital May 13, 1938, in an extremely dull and apathetic state. Orientation was approximately correct. On physical examination the patient was weak, emaciated and dehydrated, with brownish pigmentation and branny scaling of the skin of the face, the dorsum of the hands and forearms, and over the elbows. Vaginitis and urethritis were severe. The tip and edges of the tongue were fiery red and smooth, and the patient complained of a burning sensation in the mouth. The abdomen showed generalized tenderness. The gait was unsteady, and the patient described her feet as "wanting to go the wrong way." The knee kicks were hyperactive, pseudoclonus was present and the Babinski, Oppenheim and Gordon reflexes were absent. The abdominal reflexes were absent. The temperature was subnormal and tachycardia was present. Laboratory examinations were not significant.

*Progress.*—On admission the patient was placed on a control diet of carbohydrates and pork fat and observed for eight days. At the end of this period she exhibited a marked aggravation of the mental symptoms. She was fearful and apprehensive, refused to remain in bed at night, required forced feeding and was disoriented. Her attitude was negativistic. Physical weakness was more marked and coarse muscular tremors were observed. Nicotinic acid was now given orally, 1,000 mg. in five daily doses. The control diet remained unchanged. On the fourth day of this regimen vaginitis, urethritis and glossitis had disappeared. The appetite was improved, the patient was eating well, and she was more alert and responsive. On the fifth day she was well oriented, stated that she felt "just fine," and manifested a reviving interest in her surroundings. At the end of twelve days of this therapy none of the elements of pellagra were present, the nutrition and general strength were improved, and the mental condition was apparently normal. The patient was assisting with the routine care of others. A high calory, high vitamin diet was now substituted for the con-

trol diet, and two weeks later the patient was paroled symptom free and with a gain of 15 pounds (7 Kg.).

**CASE 8.—History.**—J. K., a white woman aged 27, a housewife, was a patient in the state hospital in 1935, having had pellagra with psychosis. She was paroled at the end of five months, apparently recovered. The history reported recurrent pellagra each spring since the patient was 11 years of age. The present attack began in December 1937 with the typical red rash, gaseous eructations and diarrhea, soreness of the mouth and throat, and loss of appetite. For one month or more prior to admission food had been taken very poorly. The patient became bedridden and two weeks prior to admission she became apprehensive and depressed and manifested insomnia, delusions and auditory and visual hallucinations.

**Examination.**—At the time of admission, May 11, 1938, the patient was apathetic and unfriendly but exhibited no other inappropriate behavior. She was well oriented and declared that she was not mentally disturbed. The significant physical changes were emaciation, typical pellagrous residuals on the face and extremities, and mild glossitis and vaginitis. The lower part of the abdomen was tender. Hyperactive knee jerks were the only neurologic manifestations. The temperature was 99 F., pulse rate 94 and blood pressure 120 systolic, 80 diastolic. Laboratory examinations revealed only a mild anemia.

**Progress.**—The patient was given a control diet of carbohydrates and pork fat and was observed for three weeks. At the end of this period the dermal residuals, vaginitis and urethritis had practically vanished but glossitis persisted. Mental symptoms were most manifest and had become progressively worse. There occurred episodes, usually of only a few hours' duration, in which the patient exhibited a rather typical catatonic state; she stood motionless, refused to speak or eat, required forced feeding, and responded to auditory hallucinations. She arose at absurd hours during the night and began sweeping or playing with paper dolls. Burning of the mouth, throat and stomach was reported at times.

She was now given 500 mg. of nicotinic acid daily by mouth, but no additions were made to the control diet. On the second day of this therapy the patient reported an improved appetite, stated that she felt "lots better," and denied recurrence of hallucinations. She assisted for the first time with some of the ward routine. At the end of eight days the patient volunteered that she was feeling fine and wanted to return home. No dermal or mucosal lesions were evident, and the mental condition appeared normal. There had been no evidence of abnormal behavior since the second day of nicotinic acid therapy. At the end of eleven days of this regimen the gain in weight was 11 pounds (5 Kg.). The patient was now given a well balanced diet, and general improvement continued until parole was granted several days later. The total gain was 21 pounds (9.5 Kg.).

**CASE 9.—History.**—L. V., a white woman aged 49, brought to the hospital by ambulance June 26, 1938, had a history of recurrent attacks of pellagra for eight years. The present illness began in March 1938, with reddening of the ankles and forehead, loss of appetite, constipation, and generalized weakness and nervousness. The gait became staggering and the patient became bedridden. Eggs, milk and brewers' yeast were given and taken well at times. Two weeks prior to admission, severe pain developed in the neck and shoulders with retraction of the head, and coarse, generalized muscular twitchings were observed at times. Mental excitement with delusions and auditory hallucinations, followed by exhaustion and stupor, supervened, and the patient was committed to the state hospital.

**Examination.**—On admission the patient was negativistic and refused to cooperate with the examiner. It was obvious that she was disoriented and out of touch with her surroundings. Development was good but nutrition was poor and the arms, hands and feet presented typical, keratotic, pellagrous lesions. The tongue was very pale and the papillas were markedly atrophied. Urinary and rectal incontinence existed. Blood pressure was 125 systolic, 90 diastolic. The rectal temperature was 102.4 F., the pulse rate 98 and the respiratory rate 24. On neurologic examination the pupils were found to be equal and regular and reacted to light. The muscles of the upper

and lower extremities exhibited increased tonus and marked resistance to passive movement. Both arms, the right predominantly, were maintained in spastic flexion, and the patient complained bitterly of pain in the shoulders and arms when these parts were manipulated. Bilateral wristdrop and loss of grasp were observed. The biceps, radial and ulnar reflexes were markedly hyperactive, and the act of tapping with a finger over the distribution of the brachial plexus produced pronounced reflex jerks in each arm. In the lower extremities the knee kicks were hyperactive, there was bilateral, sustained ankle and patellar clonus, and the Babinski, Oppenheim, Gordon and Chaddock reflexes were active. Abdominal reflexes were absent. Satisfactory sensory examination was impossible because of the mental condition, but it was ascertained that the patient experienced pain in the hips, thighs and calves, and she volunteered that the hands felt numb and the feet ached "like toothache." She described the feet and legs as feeling "dead and sore." Laboratory examinations were noncontributory.

**Progress.**—The patient refused to eat following admission and required feeding by tube. At the end of four days her condition remained essentially unaltered. Her diet was replaced by a control diet of carbohydrates and pork fat, which was given by spoon, and she was given 500 mg. of nicotinic acid by mouth daily and received intraspinally 40 mg. of synthetic vitamin B<sub>1</sub> for nine days. On the second day of this therapy it was observed that the patient was eating the control diet well, and she reported an improved appetite. She stated that she felt less general pain and aching, but she remained disoriented, stuporous at times and without insight. The neurologic status was examined daily, and at the end of forty-eight hours there were less pain and less spasticity in the extremities, and hyperexcitability of the normal reflexes was perhaps diminished. She was decidedly more cooperative. Improvement was gradual but progressive in all fields, and on the ninth day the patient was well oriented, pleasant and cooperative. She exhibited urinary and rectal incontinence no longer, her appetite was good, and she took the control diet well and requested still more. She was eating unassisted. Moderate hypertonus and pain persisted in the upper extremities with hyperactive reflexes, but wrist drop had disappeared and the hand grasp was much stronger. The only significant reflexes elicited with certainty in the lower extremities were ankle and patellar clonus and a suggestive Babinski reflex. The temperature was normal after having attained a maximum of 105 F. on the third day. Memory and concentration were still poor and insight was only partial, but the patient was much brighter and more comfortable. She was now given a well balanced diet, supplemented by 500 mg. of nicotinic acid orally and 40 mg. of thiamin chloride intravenously. General improvement continued, and at the end of another nine days the patient was mentally clear, cheerful and friendly and insisted on walking a few steps with assistance. At the time of this report the only objective neurologic manifestations are sustained ankle clonus and unsteady gait when walking is attempted. Subjectively the patient experiences slight soreness in the calves and hypoaesthesia of the soles. Her general strength and nutrition have strikingly improved and she is apparently approaching recovery.

#### COMMENT

In none of the cases studied were gastric analyses performed, nor was the urine examined for excretion of porphyrin, these laboratory procedures not being available at the time of this study.

An interesting observation was the lack of recurrence of pellagrous dermatitis in several of these pellagrins when exposed repeatedly to the direct rays of intense sunlight during the period of nicotinic acid therapy for as long as forty minutes at a time.

#### SUMMARY AND CONCLUSIONS

1. Thirteen classic cases of endemic pellagra responded promptly to nicotinic acid therapy. The most striking as well as the most gratifying observations in my experience were the rapid healing of lesions in the alimentary

tract with development of an excellent appetite and gastrointestinal function, and the spectacular disappearance of mental symptoms, which in several cases were profound and of protracted duration.

2. Of four control patients on a pellagra-producing diet without medication, two who were not severely ill underwent spontaneous remission from pellagra, while two became progressively worse, showing marked exacerbation of the mental and nervous symptoms chiefly. The latter two recovered dramatically when the control diet was supplemented with nicotinic acid.

3. Five cases of pellagra, four endemic and one secondary to cardiovascular-renal disease, showed marked improvement or actual remission of the pellagrous element when given a pellagra-producing diet and nicotinic acid.

4. In a case of pellagra secondary to cardiovascular-renal disease terminating in heart failure, blanching of erythema of the face and neck and over the sternum on the second day of nicotinic acid therapy was observed. The same effect was observed in other cases. In a case presenting erythema of the entire face, with dilatation and plugging of the sebaceous follicles of the nose and deep redness and leathery induration of the skin of the neck, nicotinic acid therapy produced blanching within forty-eight hours and a return to normal color and condition in the course of a few days. During this time the patient was receiving a pellagra-producing diet.

5. Nicotinic acid does not seem to be therapeutically effective against the peripheral neuritis associated with pellagra, nor does it seem to influence directly the condition described as "central neuritis." Synthetic vitamin B<sub>1</sub> given intravenously and intraspinally in large doses produced prompt amelioration of symptoms and rapid improvement in these conditions.

6. Nicotinic acid has already proved to be not only a medical boon but an economic blessing to a large state institution where pellagra has often constituted a serious problem. The period of hospitalization (to say nothing of the mortality rate) for the usually severe type of case which is received here promises to become vastly reduced, while the actual cost of the nicotinic acid as given has been relatively negligible in the individual case.

**All Calcium Replaced Every Six Years.**—Calcium is the most permanent thing in animal life. The chalk cliffs of Dover, so dear to the English heart, are made up of the calcium compounds of the mollusk shells and urchin spines which dropped to the ocean bed a hundred million years ago. Large animal bones and teeth have remained in protected places almost intact for millions of years, and the only evidence we have of man's first million years is in the calcium-bearing bones and teeth which he has left. These bits of us which may survive for posterity amount to but little more than a box of chalk, but to maintain this meager storehouse the average adult must assimilate about 0.45 gram (0.016 ounce) of the element calcium per day, for the bones and teeth are continuously breaking down and exchanging new molecules for old, and calcium is being continuously excreted. All of our calcium is completely replaced about every six years, and the only way to maintain the balance in the body is to take in a sufficient quantity in the food. If there is insufficient intake the body tries to make adjustment, but it is never completely successful. It goes on excreting calcium, taking it from the bones and teeth. If calcium deficiency continues for long periods, the attempted adjustment evidences itself in serious ill health of various sorts, and if the shortage is really severe, premature death is almost certain.—Furnas, C. C., and Furnas, S. M.: *Man, Bread and Destiny*, New York, Reynal & Hitchcock, 1937.

## PREGNANCY AND TUBERCULOSIS

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The relationship between pregnancy and tuberculosis has been a topic of interest to physicians and their patients for centuries. In the old writings one finds repeated expression of the notion that sterility may be a factor in the pathogenesis of consumption. Pregnancy was prescribed, therefore, for its prevention or treatment. "Among those who have entertained the opinion that pregnancy impedes the march of phthisis may be mentioned Rokitsansky, Clark, Williams, Andral, Warren, and, indeed a large majority of observers, up to the close of the last century."<sup>1</sup>

The converse doctrine that conception, pregnancy, parturition and lactation, together or singly, once or repeated, may be responsible for the breakdown was later asserted. Grisolle maintained that "pregnancy manifests a marked injurious influence over the progress of phthisis while accouchement and the puerperal state

TABLE 1.—Pregnancy and Experimental Tuberculosis in Guinea Pigs

Infection	No. of Guinea Pigs	Average Amount of Tuberculosis per Pig, Difference from Controls,* Units	Probable Error of Difference
Early in pregnancy.....	60	+0.30	±0.14
Late in pregnancy.....	90	+0.10	±0.11
Inhalation route.....	35	+0.20	±0.16
Subcutaneous route.....	115	+0.20	±0.10
Young removed at birth.....	15	+0.60	±0.25
Given excess young to nurse.....	20	+0.10	±0.20
Total pregnant.....	150	+0.20	±0.08

\* Control average equals 7 units; see Bogen, Emil: *Transactions of the National Tuberculosis Association* 28: 163, 1932.

fail to exert any prejudicial influence over the march of the pulmonary disease; but, on the contrary, the disease goes on as before, uninfluenced by the puerperal state, or in the less intense cases, it is more or less perfectly arrested."

Most other writers reversed these conclusions and insisted that it was particularly parturition and the puerperium that were to be feared. Continence, sterilization, contraception or abortion were, accordingly, enjoined on the women subject to the infection.<sup>2</sup> The maxim that "a tuberculous maiden should not marry; a tuberculous wife should not conceive; a tuberculous pregnant woman should not carry through" was widely quoted.

The few reports obtainable of experiments on the effect of pregnancy on tuberculosis in animals show little connection between these conditions. Several workers observed a slight retardation of tuberculosis in small groups of guinea pigs which had been allowed to become pregnant.<sup>3</sup> A group of 140 pregnant tuberculous animals studied at Olive View, Calif., showed just about the same average amount of disease as the

This study was made with the aid of WPA Project 465-03-3-178.

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1. Lawson, L. M.: *A Practical Treatise on Phthisis Pulmonalis*, Cincinnati, Rickey, Mallory & Co., 1861.

2. Osler, William: *The Principles and Practice of Medicine*, New York, D. Appleton & Co., 1892.

3. Jameson, E. M.: *Gynecological and Obstetrical Tuberculosis*, Philadelphia, Lea & Febiger, 1935.

controls. The injection of follicle-stimulating and of estrogenic substances and of corpus luteum extracts also failed to influence the course of the disease in our animals. No significant difference in the resistance to tuberculosis could be shown between guinea pigs of different sex or ages.

It has been repeatedly stated that tuberculous women may enjoy a temporary remission of the disease during pregnancy, only to relapse with increased activity after parturition.<sup>4</sup> When divided according to the stage of pregnancy in which infection occurred, however, guinea pigs infected late in pregnancy generally showed no more tuberculosis than those inoculated earlier.

TABLE 2.—*Married Women at Olive View Sanatorium*

<b>Years married:</b>	
Less than 1.....	11
1 to 2.....	132
2 to 5.....	393
5 to 10.....	571
Over 10.....	818
Total reporting.....	1,930
Total years, 18,123	
Average years married, 9.4	
<b>Years since last pregnancy.</b>	
Less than 1.....	294
1 to 2.....	372
2 to 5.....	400
5 to 10.....	390
Over 10.....	354
Total reporting.....	1,900
Total years, 9,950	
Average years since last pregnancy, 5.2	
<b>Number of pregnancies:</b>	
None.....	351
1.....	539
2.....	362
3.....	246
4.....	156
5 to 10.....	211
10 plus.....	18
Total reporting.....	1,573
Total pregnancies, 4,467	
Average pregnancies per woman, 2.4	
<b>Number of children:</b>	
1.....	783
2.....	474
3.....	272
4.....	138
5 to 10.....	169
10 plus.....	11
Total reporting.....	1,817
Total children, 4,164	
Average children per woman, 2.2	

If the raised diaphragm, analogous to that produced by pneumoperitoneum, had a beneficial effect by producing pulmonary collapse, it would be expected that this effect would be manifested particularly in animals infected by inhalation and not in those with abdominal infection from subcutaneous injection.<sup>5</sup> In our experiments no such difference was observed.

If the drainage of the mother's system by lactation was the important factor, as has been suggested, removing the young at birth should have a beneficial effect and wet nursing an ill effect.<sup>6</sup> Experimentally, tuberculous guinea pigs given excess progeny to nurse showed a slightly higher mortality rate, but the extent of the tuberculous lesions observed in these animals was no greater than that in the controls or in those whose young were removed.

The fact that the rate of death from tuberculosis is higher for young women between the ages of 15 and

30 than for other females or for young men of the same ages has been ascribed in part to increased susceptibility resulting from pregnancy.<sup>7</sup> Study of vital statistics indicates that the difference is not constant, being marked years before pregnancies may be expected to occur but disappearing when the child-bearing period is only half completed.<sup>8</sup> Analysis of the records of death from tuberculosis reveals rather an infrequency of pregnancies in the group involved.<sup>9</sup> More intensive study of the subjects concerned shows an incidence of intimate contact and massive exposure, as in the case of a nurse or personal attendant on a consumptive, which may account for the difference.

The effect of pregnancy on the course of tuberculosis may be estimated from three types of data available at Olive View; namely, the extent of tuberculosis found at admission in patients with various pregnancy histories, the response to treatment of patients who became pregnant while in the sanatorium, and the effect on the future life expectancy of those who become pregnant after leaving the institution.

The records of 10,000 patients admitted to the Olive View Sanatorium were examined. Half of these were males (4,875), and nearly half of the remainder (5,125) single women (2,492), leaving 2,633 married women, of whom 500 had never become pregnant according to their histories and 718 had never borne a living child. Of the women with a history of pregnancy, more than a third reported only one child, and the average number of children per woman was only 2.2, although many more pregnancies were recorded. The average length of time at admission since the last pregnancy had occurred was about five years. Since the average duration of married life was only nine years, with 2.4 pregnancies per woman, the average interval between a pregnancy and any chance event would have been even less. The pregnancies were therefore not significantly related to the incidence of the tuberculosis.

Analysis of the stage of the disease in single, childless and parous women shows little difference in the extent of the disease on admission. The end results or case fatality rates give similar figures.

About fifty women were pregnant at the time of admission to the sanatorium or became pregnant while away from the institution on a pass. For ten of the fifteen who were away, the date of probable exposure to conception and the date of the last menstrual period were known. Exposure in all cases took place between twelve and eighteen days before the next period, approximating the so-called fertile period, or time of ovulation, according to Hartman<sup>10</sup> and others. For the prevention of such conceptions, if it is desired to lessen them, it has been suggested that patients be given passes home only during the week before and the week after onset of the menses. One patient, however, who claimed to have followed this rule faithfully, nevertheless became pregnant after discharge. Contraceptive advice and equipment was given to many of these women and to other women when they went out on passes or on discharge, though not uniformly. One pregnancy was reported in spite of assertedly conscientious use of a contraceptive powder without an occlusive diaphragm or pessary.

7. Norris, C. C.: *Gynecological and Obstetrical Tuberculosis*. New York, D. Appleton & Co., 1921.

8. Arnold, Lloyd: *Am. Rev. Tuberc.* 28:262 (Aug.) 1933.

9. Nicholson, Edna E.: *Tuberculosis Mortality Among Young Women in New York City*. New York, National Tuberculosis Association, 1933.

10. Hartman, C. G.: *Time of Ovulation in Women*. Baltimore, Williams & Wilkins Company, 1936.

4. Steinbach, M. M., and Klein, S. J.: *J. Exper. Med.* 65:205 (Feb.) 1937.

5. Trimble, H. G., and Wardrip, S. H.: *Am. Rev. Tuberc.* 36:111 (July) 1937.

6. Armstrong, John: *Practical Illustrations*. London, Baldwin, Cradock & Joy, 1818.

Of the fifty women, fourteen were allowed to be delivered while most of the others had a therapeutic abortion, performed either vaginally or by abdominal hysterotomy, usually accompanied by sterilization. The stage of the tuberculosis and the fate of these women according to the treatment given are here of interest.

As might have been expected from the general distribution of admissions to Olive View, only three of these women had minimal tuberculosis at the time of admission, and these three were alive when last heard from. Eleven had moderately advanced tuberculosis; of these only one has since died (soon after abortion was performed). Thirty-six had far advanced tuberculosis; sixteen are known to have died, six after full term delivery and ten after abortion, with an annual case fatality rate of 8 per cent a year for those delivered at term and 7 per cent for those whose pregnancy was aborted. The mortality for those delivered at full term is little higher than the rate for those whose pregnancy was aborted, and neither rate seems higher than that of the general sanatorium population.

Responses received from patients discharged from Olive View indicate that more than fifty other patients became pregnant after leaving the institution and that most of them went on to term. The mortality rate in this group was extremely low; only two of the patients are now known to be dead, and both were in the group of ten with far advanced tuberculosis when admitted. It is obvious, however, that the patients who responded to inquiries might have been expected to have a better fate than the remainder, since they lived at least long enough to send us the information and probably considered themselves in good enough shape to enter into pregnancy.

Despite our negative statistics many of the 2,633 female patients, as well as the physicians interviewing

true, they deserve much weight. It may be questioned, however, whether they more than express the prejudices or preconceptions of the patient or those of the examining physicians, often made known in an accompanying note. The greater attention given a woman's health during pregnancy may be a factor in revealing otherwise overlooked conditions.

TABLE 5.—Pregnancies After Discharge from Sanatorium

	Full Term	Abortion	Total
<b>Minimal tuberculosis</b>			
Number of patients.....	18	3	21
Number given collapse therapy.....	0	0	0
Number of deaths.....	0	0	0
<b>Moderate tuberculosis</b>			
Number of patients.....	10	2	12
Number.....	0	2	2
Number.....	0	0	0
<b>Far advanced tuberculosis</b>			
Number of patients.....	12	15	27
Number given collapse therapy.....	9	9	18
Number of deaths.....	1	2	3
<b>Total</b>			
Number of patients.....	40	20	60
Number given collapse therapy.....	9	11	20*
Number of deaths.....	1	2	3

\* Five, thoracoplasty.

The direct physiologic effect of pregnancy, parturition and lactation may actually represent a minor aspect of the real problem. One of the most important factors in the treatment of pulmonary tuberculosis is rest. It is almost impossible to induce many mothers to take the amount of rest required for their condition, and particularly to leave their children and go to a sanatorium for the treatment they require. Other therapeutic factors are also closely linked with the economic situation of the patient. If the added expense of bearing and caring for a child means that the mother will be deprived of adequate food, rest and medical care, it cannot be lightly incurred. Adequate economic aid, however, may often safeguard the mother even better than interference with pregnancy.

The treatment of tuberculosis in a pregnant woman should not be interrupted by the pregnancy. Pregnancy proceeding to successful delivery and recovery while the lung remains collapsed under artificial pneumothorax, phrenic interruption or even thoracoplasty is by no means unusual today. A recurrence developed after delivery in only a few of the twenty cases observed at Olive View.

#### CONCLUSIONS

By and large, it seems that the tuberculous woman who becomes pregnant has a course not greatly different, so far as her tuberculosis is concerned, than her tuberculous sister who does not become pregnant, while so far as her pregnancy is concerned she does not greatly differ from other pregnant women. The tuberculous woman who becomes pregnant should have the benefit of expert medical attention both for her tuberculosis and for her pregnancy, but the woman who faces only one of these conditions at a time should likewise have expert care. If the pregnant tuberculous woman has active disease she should have active collapse therapy and rest treatment, but so should she if she were not pregnant. A long and exhaustive labor should be avoided for the tuberculous women by the use of obstetric analgesia and surgical intervention when indicated; but this is becoming a general demand.

In cases of well healed, arrested tuberculosis many exertions may be safely undertaken that should be forbidden during a more active phase. In unstable conditions, when the future course of the disease hangs in

TABLE 3.—Effect of Parity on Stage of Tuberculosis and Mortality Rate

Preg- nancies Before Admission	No. of Cases	Far Advanced, Per- centage	Number Died	Death per Patient	Average No. of Years Followed	Deaths Yearly per Patient
None.....	784	76	295	0.376	2.9	0.131
1.....	792	71	290	0.366	2.9	0.126
2.....	467	72	175	0.375	3.3	0.132
3-4.....	409	71	166	0.406	3.1	0.131
5 or more..	181	70	66	0.364	2.7	0.137
Total....	2,633	72	992	0.376	2.9	0.130

TABLE 4.—Effect of Pregnancy on Patients While at Sanatorium

	No. of Cases	Far Ad- vanced, Per- centage	No. Died	Deaths per Patient	Average No. of Years Followed	Deaths per Patient Yearly
Allowed to go to full term.....	14	71	6	0.429	3.3	0.128
Therapeutic interruption.....	36	72	11	0.306	2.5	0.121
Total.....	50	72	17	0.340	2.8	0.123

them, stated on admission that they traced the breakdown to the last pregnancy. One hundred and twenty-two, or about 5 per cent, stated definitely that the onset of tuberculosis was observed in connection with a pregnancy: during the course of the pregnancy in twenty-six cases, after a miscarriage in twenty-seven and after a delivery in sixty-nine. Several of the letters received after discharge stated that the mother was in poor condition after delivery. If these statements were really



the balance, pregnancy should be at least postponed. Contraceptive measures may sometimes be recommended to a woman with tuberculosis in whom, if pregnancy does occur, it may be allowed to proceed without interruption. With extensive advancing lesions and with greatly diminished respiratory reserve, on the other hand, every precaution must be taken to avoid overtaxing the patient's strength. Since the seriousness of the obstetric complications increases with delay if abortion is performed, early diagnosis by means of biologic tests should be made. Interruption may then be done with the least possible trauma and risk. The occurrence of pregnancy should not allow neglect of the pulmonary condition before, during and after the obstetric management.

#### ABSTRACT OF DISCUSSION

DR. J. C. IRWIN, Los Angeles: This paper opens the way for a discussion of one of the most important problems that confront the obstetrician and phthisiologist. It has been estimated that 30,000 tuberculous women become pregnant in this country annually and that a third, or 10,000, of them die within a year after delivery. With such an appalling death rate it is hard to reconcile the statement that the tuberculous woman who becomes pregnant has a course not greatly different so far as her tuberculosis is concerned from her sister who does not become pregnant. This group of 30,000 cases does not include many thousands of cases of incipient disease which are never recognized and in which recovery occurs. About fifty years ago it was believed by a considerable number of clinicians that pregnancy improved tuberculosis. In fact, the young tuberculous woman was advised to marry. Following that period the pendulum swung to the other extreme for twenty-five years, when probably a majority of clinicians advised therapeutic abortion in practically all tuberculous women so diagnosed in the first half of pregnancy. During that period I formed a lasting opinion, as one is prone to do in the early years of clinical training and experience. As a resident and instructor at the University of Pittsburgh, I had charge of 3,000 deliveries in the home. Of these, nine women died of tuberculosis within the first three months post partum. None died before delivery. That lasting impression is that, in spite of experimental data on animals, pregnancy does constitute a serious drain on the tuberculous mother. The fact that she gains weight and looks better during pregnancy is misleading to the clinician and constitutes one of the most puzzling phenomena in clinical medicine. There is something that carries the chronically ill and doomed woman through pregnancy until her function with regard to propagation of the species has been fulfilled and then allows her to die, sometimes quickly. Had this phenomenon not been observed in the woman afflicted with cancer, diabetes and pernicious anemia, I would be inclined to believe that in the case of tuberculosis it is due to a gradually increasing partial collapse effect of the pregnant uterus. The rapid invasion of the disease shortly after delivery could certainly be explained by the sudden relief of the pressure allowing the lung to expand. This, then, suggests a definite indication for collapse therapy in the first few hours or days after delivery of the active, tuberculous woman who goes to or near full term pregnancy. Opinion as to proper procedure and treatment, I believe, now lies in the middle course. The improvement in the treatment of pulmonary tuberculosis by surgical means, added to the old rest and fresh air treatment, has changed the picture almost completely. The tuberculous patient who is seen for the first time in early pregnancy should be examined carefully by the phthisiologist for activity, and his advice should be followed after observation of the patient for a short time. I believe that abortion should be performed in active tuberculosis if the patient is seen early when the abortion can be done under evipal or spinal anesthesia.

DR. EMIL BOGEN, Olive View, Calif.: More than one tenth of all the patients in whom tuberculosis is diagnosed die annually. Pregnancy gives no definite protection against this

high mortality rate in tuberculosis. Despite the best efforts of obstetricians, pregnancy itself carries considerable hazard. Tuberculosis offers no insurance against that hazard. The woman who has tuberculosis and pregnancy is in greater danger than the woman who has only one of these conditions, but it is not because of any increased mortality due to either one of the conditions; it is merely the summation of the two forms of risk. Another factor which must be considered in advising a tuberculous woman as to whether she may or should become pregnant is the question of the fate of the child following childbirth. In the past, the outlook for children of tuberculous parents was extremely dismal. At present it can be said that in patients whose tuberculosis has been arrested, and who are continuing under good medical care, the outlook for the children is very good. In instances in which the patient has active disease with positive sputum, separation of the child from the parent is generally advised, and the woman with active tuberculosis who undertakes a pregnancy should look forward to a prolonged separation from her child...

#### A TEN AND ONE-HALF DAY CHIMPANZEE EMBRYO, "YERKES A"

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Through the cooperation of the Yale Laboratories of Primate Biology and the Carnegie Laboratory of Embryology, an implanted ovum of the chimpanzee, slightly younger than the earliest human ovum, has been secured. The circumstances leading to this achievement and the similarity of this youngest anthropoid to the human embryo render the occasion of interest to the gynecologist, the embryologist and the anthropologist alike.

The success that attended the enterprise was no mere accident, though a certain amount of good fortune favored us. The time of ovulation was calculated from data collected by the staff of the Yale station over a period of years. At the suggestion of Dr. Robert M. Yerkes, director of the Yale Laboratories, one of us (J. H. E.) set out to determine the relation of ovulation to externally manifest events of the menstrual cycle, namely to the menstrual flow and, more precisely, to the intermenstrual swelling of the sex skin.<sup>1</sup>

#### TIME OF OVULATION IN THE MENSTRUAL CYCLE

Because of the difficulty of handling the sexually mature ape, the method of choice in determining ovulation is that of isolated coitus. Since it is now known for a number of mammalian species that spermatozoa remain effective for fertilization in the female genital tract for a maximum of twenty-four hours and the ovum not more than twelve hours, insemination within the limits of a menstrual cycle served tentatively in the chimpanzee to fix the time of ovulation within a day or so of coitus.

Preliminary to such experiments, however, the menstrual cycle had to be studied in numerous individuals. On the basis of 164 cycles recorded for eleven mature female chimpanzees, it was found that the length of the modal cycle is thirty-five days, or a week longer

<sup>1</sup> Elder, J. H.: The Time of Ovulation in Chimpanzees, *Yale J. Biol. & Med.* 10: 347-364 (March) 1938.

than in most other primates with the possible exception of certain baboons and the gorilla.<sup>2</sup> In common with baboons, certain macaques and other monkeys, the chimpanzee exhibits tremendous swelling of the sex skin during the midinterval. This ordinarily reaches its maximum not later than the fifteenth day of the cycle and remains in this condition for about ten days. The inactive period, including the menstrual flow, is variable, ranging from 5.1 to 13.7 days in the series studied.

Since similar swellings may be produced in juvenile females by injections of estrogen, it is assumed that the genital swelling is conditioned by a growing ovarian follicle. The beginning of detumescence, therefore, may be expected in normal cases to mark the establishment of a corpus luteum following ovulation. In fourteen unequivocal cases, supported by others less exact, Elder<sup>1</sup> learned that ovulation occurred a few days before the sex skin began to regress—usually from one to three but in other cases up to five days. For the present observation, in order to increase the chances of securing a fertilized ovum, two subjects were mated daily for a period of five days prior to the anticipated day of detumescence.

#### HISTORY OF FERTILE FEMALE

Two attempts have been made thus far to apply the facts ascertained in the isolated coitus procedure to the task of securing a young embryo. In at least one case, that of Mamo, the efforts were crowned with success. The endometrium of a second female (May) has not yet been fully explored. Since this report is concerned chiefly with the specimen obtained from Mamo, we shall present a brief summary of her recent reproductive history.

Mamo has always been an exceptionally healthy and vigorous chimpanzee. On Aug. 14, 1936, she menstruated for the first time at the age of about 8 years. As in adolescent females generally, the cycles of the first year were irregular and probably mostly non-ovulatory. Two cycles of tumescence appeared in April and May 1937 without the occurrence of an intervening menstrual flow. Such anomalous behavior has been noticed also in adolescent rhesus females of the Carnegie Colony.

On days 22, 23 and 24 of the cycle that began Jan. 21, 1938, Mamo was mated with a male of known fertility. On day 24, however, the sex swelling had receded considerably, so operation was deferred for more favorable indications. This proved to be a fortunate decision, for observations on the ovaries a month later showed that ovulation had not taken place during this, the January-February, cycle but probably in the one preceding it, which began Dec. 16, 1937. Mamo again menstruated on February 23.

On each of days 17 to 22 (March 11-16) Mamo again copulated with male Bokar in five minute periods. On day 23 detumescence began and on this day also she refused the male. The ovum to be described, estimated at 10½ days of age, was recovered March 26. This particular day was selected for the operation because an ovum from 10 to 12 days old was desired as a stage approximating the youngest known human ovum. It is gratifying to record the fact that the ovum recovered actually fell within the anticipated range.

#### ANESTHESIA

Experimental use of various anesthetics in the Yale Laboratories has shown that pentobarbital sodium, alone or supplemented with ether, is a satisfactory agent.<sup>3</sup> Tractable animals are trained to receive the drug rectally while presenting the buttocks at the wire netting of the cage. With our present subjects we insured full retention of the solution by giving the injection under initial ether anesthesia, induced by brief confinement in a specially constructed ether chamber. For Mamo, 33 mg. of pentobarbital sodium per kilogram of body weight was given rectally. This had to be supplemented during the operation by small amounts of ether to maintain satisfactory relaxation for laparotomy.

#### HYSTEROTOMY

The hysterotomy was performed by one of us (C. G. H.), assisted by Dr. Kenneth A. Morris of Jacksonville, Fla. The method for enucleating the endometrium was one that had been worked out and used in nearly 100 operations on the rhesus monkey at the Carnegie Colony, to be described in detail by W. M. Firor. To reduce the hemorrhage the uterine arteries were occluded by means of a rubber tourniquet placed about the uterine isthmus.

The uterus of Mamo, a nullipara, measured 5 cm. in lateral diameter; that of May, a multipara, 6.5 cm. The uterus of the chimpanzee, therefore, approximates that of women in size; but it is more accessible because of the less prominent crest of the pubis in the ape.

After the endometrium was enucleated as completely as possible, the uterus and the abdomen were closed with silk. Subcuticular stitches were used in closing the skin incision, as taught by Dr. Firor for use with animals that cannot readily be handaged. This procedure proved as efficacious in the chimpanzee as in the monkey. Experience with the monkey leads us to anticipate perfect regeneration of the endometrium in the chimpanzee.

The ovaries also were about the size of human glands. In both May and Mamo they were highly vascular. In each animal the right one, containing the corpus luteum, was almost cyanotic because of the numerous veins over the whole surface. The right ovary measured slightly under 20 mm. in Mamo and slightly over 20 mm. in May. In Mamo a small yellow corpus albicans, estimated at more than 1 month old, was present. The ovary of May was removed and will be described together with the endometrium as a whole on another occasion.

#### THE EMBRYO

In the course of the operation the ventral half of the endometrium was removed first and its surface inspected by the naked eye. Near the midline a tiny hemorrhagic spot like a pinprick was visible, and this was taken as evidence of early pregnancy, since extravasation about the implantation site is characteristic of the primates.<sup>4</sup> The specimen was immersed in physiologic solution of sodium chloride and within fifteen minutes in Bouin's fluid, in which it was shipped to Baltimore. After fixation it was found that the site of the ovum had become obscured by the opacity of the overlying tissue, but with proper magnification

3. Elder, J. H.: Methods of Anesthetizing Chimpanzees, *J. Pharmacol. & Exper. Therap.* 60: 347-357 (July) 1937.

2. Elder, J. H., and Yerkes, R. M.: The Sexual Cycle of the Chimpanzee, *Anat. Rec.* 67: 119-143 (Dec.) 1936.

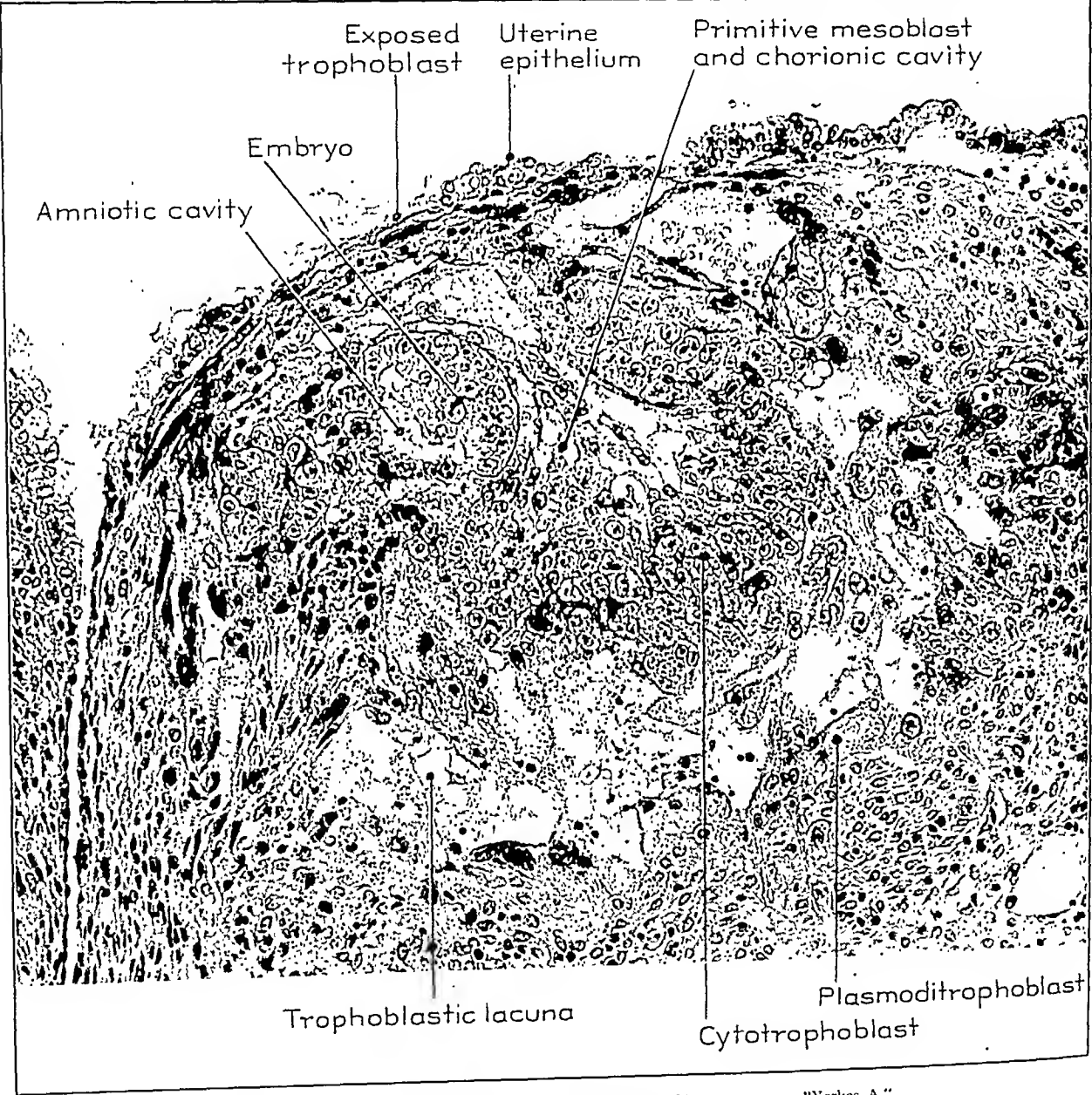
4. Hartman, C. G.: The Corpus Luteum and the Menstrual Cycle, Together with the Correlation Between Menstruation and Implantation, *Am. J. Obst. & Gynec.* 19: 511-522 (April) 1930. Wislocki and Streeter.<sup>5</sup>

and illumination it was found again (by C. H. H.). The site was further marked by a tag of coagulum which was determined subsequently to have issued from the site.

The implantation site having been located on the uterine mucosa, it was cut out in a block about 3 by 3 by 3 mm. and was embedded by the double-embedding

surface epithelium, which in places is of endothelial thinness indicative of efforts to heal the wound. In two places the trophoblast seems indeed to be uncovered and exposed to the uterine lumen.

The point of entrance is practically nonexistent and there is no trace of an "operculum" as described for human ova the preservation of which leaves much to



Section 59 of a series of 126 sections (6 microns thick) of chimpanzee ovum "Yerkes A."

method in celloidin and paraffin and cut into sections measuring 6 microns in thickness. The essential features of the embryo can be recognized from the accompanying illustration, which is section 59 of a series of 126 passing through the ovum.

It is seen at once that the ovum is completely buried beneath the surface epithelium, as it is in man at this time, differing in this respect from the shallow attachment in the monkey.<sup>5</sup> It is situated just beneath the

be desired. In only one limited region (section 4-7, slide 5) is there a definite communication between the ovum and the uterine lumen. It is here that a strand of coagulated exudate containing red blood cells has issued from the site of the ovum. The coagulum is continuous with a lacuna, and blood is present in both.

The trophoblast forms the bulk of the ovum at this stage and is much more developed on the deeper side. On the periphery the plasmotrophoblast may be seen invading the maternal tissues, sending out diffuse streamers and tapping blood vessels (upper right of illustration). Large lacunae, some containing erythro-

5. Wislocki, G. B., and Streeter, G. L.: On the Placentation of the Macaque (*Macaca mulatta*) from the Time of Implantation Until the Formation of the Definitive Placenta. *Contrib. Embryol.* 27: 1-66 (May) 1938 (publication 496, Carnegie Institution of Washington).

cytes, have formed in the plasmotrophoblast. The cytotrophoblast lies within this in irregular masses and bounds the segmentation cavity containing a loose reticulum of mesenchyme cells generally designated as extra-embryonic mesoderm.

The embryo proper lies eccentrically. It consists of an embryonic shield with crowded, pseudostratified nuclei and some mitotic figures. It resembles the corresponding stage of the rhesus monkey. The amnion overlies the embryonic shield, from which it is separated by a narrow space, the amniotic cavity. There is as yet no yolk sac and, of course, no gut entoderm. The layer of cells which lies closely applied to the convex ventral surface of the embryonic shield consists of entodermal cells tentatively regarded as primitive and closely related to the other elements of the segmentation cavity, but some of them are destined to form the outer layer of cells bounding the cavity of the yolk sac. This interpretation is based on the embryonic history of the rhesus monkey.

The ovum surrounds a uterine gland with which it happened to come in contact. Where the trophoblast has made contact with the uterine gland, necrosis has resulted; this is especially true of a small isolated portion which has become incorporated into the segmentation cavity.

The following measurements have been made:

Through entire ovum, including outlying streamers of trophoblast: 0.756 by 0.666 by 0.500 mm.

Excluding streamers of trophoblast: 0.720 by 0.600 by 0.500 mm.

Segmentation cavity: 0.333 by 0.213 by 0.200 mm.

Embryo proper: 0.133 by 0.126 by 0.111 mm.

The present specimen is a little smaller and less differentiated than the Miller ovum, the youngest known for man.<sup>6</sup> The latter measures 0.9 mm. in longest diameter on the slide and possesses a small yolk sac. Streeter estimates the age of the Miller ovum at from 10 to 11 days. On the basis of monkey embryos since collected at the Carnegie Colony, Hartman<sup>7</sup> has estimated it at 11 days. By comparison the chimpanzee ovum may tentatively be set at 10½ days of age.

#### SUMMARY

The time of ovulation with reference to the sexual swelling having been determined at the Yale Laboratories of Primate Biology, the Carnegie Laboratory of Embryology cooperated by assisting in the recovery of the ovum surgically and by preparing and studying the unique specimen.

The ovum contains an embryo provided with amnion but no yolk sac. It is one-fourth smaller than the Miller ovum, the youngest human specimen, which possesses a yolk sac. Implantation is "interstitial" as in man. The Miller ovum is estimated at 11 days of age, the chimpanzee ovum at 10½ days. It was recovered on day 32 of the cycle. In association with a thirty-five day menstrual cycle the chimpanzee ovulates about seven days later in the cycle than the rhesus monkey.

Wolfe and Madison streets.

6. Miller, J. W.: Corpus Luteum und Schwangerschaft: Das jüngste operativ erhaltene menschliche Ei, Berlin klin. Wchnschr. 50: 865-869, 1913.  
Streeter, G. L.: The "Miller" Ovum—the Youngest Normal Human Embryo Thus Far Known, Contrib. Embryol. 18: 31-48 (Sept.) 1926 (publication 363, Carnegie Institution of Washington).  
7. Hartman, C. G.: Time of Ovulation in Women, Baltimore, Williams & Wilkins Company, 1936.

## HYPERTENSION IN A PATIENT WITH A SOLITARY ISCHEMIC KIDNEY

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AND

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Goldblatt<sup>1</sup> and others have shown that hypertension develops in dogs and in monkeys when one kidney is made ischemic by partially clamping its artery. The hypertension is more readily produced when one kidney is first removed. This case is reported because of its bearing on previous work and because no analogous case has been found in the literature.

#### REPORT OF CASE

*History.*—A man aged 57, who first came to the University of Chicago Clinics July 27, 1937, had pneumonia at the age of 30 but was otherwise well until December 1935, when he fell

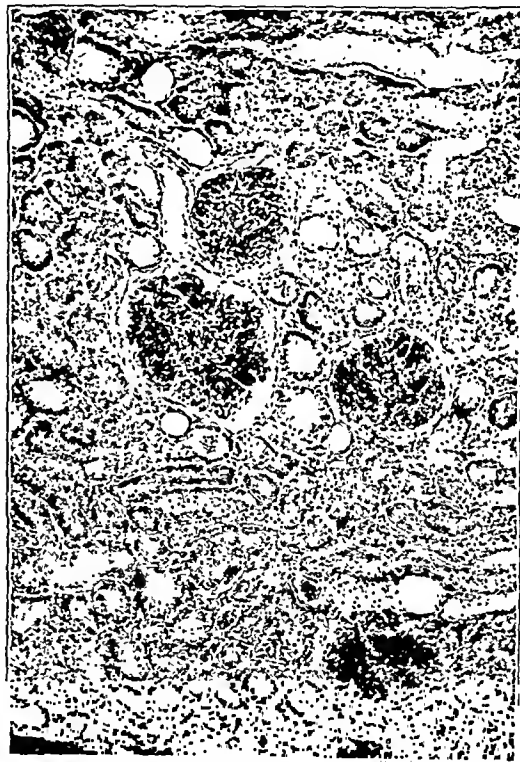


Fig. 1.—Section of surgically removed kidney showing normal parenchyma (hematoxylin and eosin stain).

down a flight of stairs. The same day the right kidney was removed because of laceration. Histologic preparations of the removed kidney showed no pathologic changes except massive hemorrhage at the site of laceration (fig. 1). After the operation thrombophlebitis developed in the legs, but otherwise the patient recovered without difficulty.

He was well for sixteen months after the operation. During that time several normal readings of the blood pressure were obtained by the attending physician. In April 1937 he began to have headaches and nausea. Two months later, in June, he visited the physician, who found a systolic blood pressure of 230 mm. There was still occasional swelling of the left leg on standing.

Dr. Isadore Pilot made possible examination of the surgically removed material.

From the Department of Medicine and the Department of Pathology of the University of Chicago.

1. Goldblatt, Harry: Studies on Experimental Hypertension: V. The Pathogenesis of Experimental Hypertension Due to Renal Ischemia, Ann. Int. Med. 11: 69 (July) 1937.

In July 1937, when he was first examined at the University of Chicago Clinics, the only abnormal observations were evidence of recent loss of weight, minimal thickening of the retinal arterics and mild compression of the veins by the arteries, a high pitched second sound at the aortic area, a blood pressure of 230 mm. of mercury systolic and 140 diastolic, an indirect inguinal hernia and a ganglion on the right wrist. Bulging of the superficial veins of the left leg could be produced by having the patient stand.

The patient was not admitted to the hospital until September

1. No significant change had taken place except the appearance



Fig. 2.—Atheromatous plaque at orifice of renal artery (indicated by arrow).

of slight retinal edema, a few small hemorrhages in the nerve fiber layer and indications of absorption of previous hemorrhages in the retinas. An increase in disproportion of arteries to veins was also noted. The patient was hospitalized for forty days without improvement. The blood pressure varied from 220/138 to 270/150. Eight examinations of the urine were made. The specific gravity varied from 1.015 to 1.023 without forcing urinary concentration. No albumin or sugar was found. Occasional hyaline casts and leukocytes were seen in centrifuged specimens. Red cells were absent. The white cell count varied from 8,800 to 9,400 per cubic millimeter. The differential count was normal. The red cell count averaged 4,500,000 per cubic millimeter. The hemoglobin content averaged 85 per cent. The stools were not abnormal. The Wassermann and Kahn reactions were negative. September 2 the nonprotein nitrogen content of the blood was 33 mg. per hundred cubic centimeters; the total protein content of the plasma was 6.41 mg. per hundred cubic centimeters; the level of serum chlorides was 99.9 millimols per liter; the serum  $pH$  was 7.49, and the carbon dioxide content of the serum was 29 millimols per liter. On the same day the urea nitrogen content of the blood was 25.6 mg. per hundred cubic centimeters and the urea clearance was 19 by the formula  $\frac{U}{B} \sqrt{V}$ , or 35 per cent of normal. An electrocardiogram September 17 was reported as showing a PR interval of 0.14 second, a QRS complex of 0.08 second, a rate of 74 per minute and a sinus rhythm. The P waves in lead 2 and in lead 3 were slightly notched. The T wave in lead 1 was practically isoelectric. The T waves in lead 2 and lead 3 were inverted. Left axis deviation was present.

After an absence of six weeks, he was readmitted on December 1. He had been growing weaker. Two days prior to this admission he began to have difficulty in voiding and could pass only a small quantity of urine at a time. Except for frequent hiccuping and a blood pressure of 290/170 there were no changes in the physical signs. Catheterization relieved the bladder of 500 cc. of urine. Because of obstruction in the prostatic portion of the urethra a catheter was strapped in place. The obstruction was apparently due to edema of the mucosa and submucosa. The patient lived seventeen days, during which time frank acute cystitis persisted. A moderate amount of albumin was present, and an occasional hyaline and granular cast was found in all specimens of urine. Red cells were rarely present. Many pus cells were consistently found. There was leukocytosis, with

the count ranging from 15,600 to 27,500 cells. The nonprotein nitrogen content of the blood was 62 mg. per hundred cubic centimeters the day before death. Other blood chemistry determinations were not abnormal. The urea clearance was 13 by the formula  $\frac{U}{B} \sqrt{V}$ , or 22 per cent of normal, December 8. Another electrocardiogram showed progressive myocardial damage with auricular extrasystoles. The blood pressure fell to 110/50 on the last day. Edema of the extremities appeared terminally. Abnormal distention was troublesome during this period. The patient died December 19, two years after the nephrectomy, of myocardial failure.

**Necropsy.**—The necropsy was performed four hours after death. The body was emaciated, weighed 109 pounds (49 Kg.) and measured 65 inches (165 cm.) in length. The external ears and nail beds were cyanotic. The abdomen was distended. Both feet and ankles and the entire right arm and hand were edematous.

The loops of the small intestine were markedly distended and were dark purplish blue. The serosal surfaces of both the small and the large intestine were dull, and the loops of intestine were held together by fibrinous adhesions. There were approximately 300 cc. of bloody fibrin-flecked fluid lying free in the abdominal cavity. There were a few fibrous adhesions in the left pleural cavity. The pericardial serosa was smooth and the sac contained 25 cc. of clear amber fluid.

The heart weighed 400 Gm., owing mainly to left ventricular hypertrophy. The endocardium, myocardium and valves appeared normal. The coronary ostiums were patent but exhibited a moderate amount of atheromatous thickening. The coronary arteries were widely patent throughout but contained a few yellow atheromatous plaques near the orifices. The abdominal aorta was markedly atheromatous, the condition increasing in severity from above downward. Many large plaques were ulcerated and calcified, and three of these contained tamponade thrombi.

Examination of the orifice of the left renal artery revealed a firm narrow opening, into which a probe could be inserted only with difficulty, the obstruction being due to an atherosclerotic plaque extending about 7 or 8 mm. distally into the vessel (fig. 2). The remaining portion of the artery was not sclerotic. This plaque was firm and completely circumscribed the orifice, so that the lumen could not be distended (fig. 3). The stump of the right renal artery showed no atherosclerosis.

The left kidney weighed 200

Gm. and contained several retention cysts filled with clear amber fluid. The cut surface bulged moderately. The capsule stripped with slight resistance, showing in places a finely granular surface. On the surface were several yellowish white areas, 1 or 2 mm. in diameter, containing purulent material. The cortex averaged from 6 to 7 mm. in thickness. The cortical rays were indistinct. The medulla appeared normal. The entire pelvic mucosa was slightly hyperemic and a few submucosal hemorrhages were present. The prostate gland was not enlarged and the prostatic part of the urethra was not obstructed. The urinary bladder contained a hemorrhagic and purulent exudate.



Fig. 3.—Orifice of renal artery (indicated by arrow).

There was hypostatic congestion in the lungs. The liver weighed 1,350 Gm. and showed only acute congestion. The walls of both the small and the large intestine were thicker than usual because of mucosal and submucosal edema and hemorrhage. This change was more marked in the lower portion of the ileum and in the colon.

No other pertinent pathologic changes were observed. The brain and spinal cord were not examined.

Death resulted from acute focal necrosis of the myocardium.

**Microscopic Examination.**—The vascular changes in the kidney were confined to the small and the middle-sized arteries. Moderate thickening of the muscular coats and thickening of



the intima narrowed the lumen in some of the arteries. Reduplication of the elastic lamina, fibrosis and cellular infiltration of the blood vessels were absent. The arteriolar walls showed no changes. Throughout the interstitial tissue were scattered areas of inflammatory cells, both polymorphonuclear and mononuclear in type, with a few small abscesses. Although the great majority of glomeruli appeared normal, several in the inflamed areas were freshly but completely hyalinized. The tubular epithelium was well preserved, although some tubules contained polymorphonuclear leukocytes. Areas of hypertrophied renal elements alternated with occasional scars. No intracapsular crescents were seen. Mild interstitial edema was present throughout (fig. 4).

Arterioles in the perirenal and periprostatic tissues and in the pancreas and spleen were markedly hyalinized. One perirenal vessel exhibited fibrinoid necrosis of its intima. The arteriolar changes elsewhere in the body contrasted distinctly with the lack of change in the kidney.

Microscopic changes of acute passive congestion and heart failure were evident in the lungs and liver. Intestinal edema and hemorrhages were observations compatible with uremia. Areas of early acute myocardial necrosis were present without inflammatory reaction. Except for the hemorrhagic and inflammatory lesions in the bladder and the intra-acinar polymorphonuclear reaction in the prostate, no pertinent changes were observed elsewhere in the body.

#### COMMENT

It is probable that this patient had a normal blood pressure prior to and for several months after the removal of the ruptured kidney. It was first noted that his blood pressure was elevated eight months before his death. In view of the moderately impaired renal function three months prior to death, it is likely that the renal function was normal before the accident.

The chief point of interest is the relative intactness of the renal parenchyma and the partial occlusion of the renal artery in a person with severe hypertension. From the pathologic description it is plain that the degree of anatomic change in the kidney was not sufficient alone to account for the high blood pressure.

The removal of the ruptured kidney threw the burden of work on the remaining one. Ordinarily one kidney is well able to maintain normal renal function. However, according to Goldblatt interference with the blood supply to a single kidney in dogs and in monkeys produces a permanent rise in the blood pressure. In our case also this occurred. The atheromatous plaque protruding into the lumen of the renal artery near its orifice from the aorta probably played the part of a clamp and cut down the flow of blood to the kidney. In addition, the fact that the kidney hypertrophied very little during the two years after removal of its mate suggests an inadequacy of blood supply. The impaired urea clearance twenty-one months after nephrectomy also points to reduced renal blood flow. However, the ischemia was not severe enough to cause atrophy.

Unfortunately the quality of renal function was not determined prior to the onset of hypertension. However, the urea clearance of the one kidney after the rise in pressure was good enough to suggest strongly that the function would be well within normal limits had the right kidney been present with a normal blood flow. The microscopic structure of the ruptured kidney showed that it was perfectly free from inflammatory, congenital or degenerative changes.

The inflammatory reaction in the remaining kidney consisted of fresh pyelonephritis and appeared to be responsible for the fresh hyaline changes in several glomeruli that were caught in the inflammatory process. The pyelonephritis was terminal, a secondary manifesta-

tion of the cystitis which appeared three weeks before death. Prior to this terminal episode, the urine contained only an occasional leukocyte.

The relatively short duration of the hypertension is borne out clinically by the lack of advanced changes in the retinal blood vessels and pathologically by the relatively small increase in the size of the heart. The coronary arteries were in good condition and probably could not have interfered with hypertrophy of the myocardium.

The unusual degree of arteriolar thickening in the perirenal and periprostatic tissues, pancreas and spleen and the small amount in the kidney are similar to the anatomic changes observed by Goldblatt in his hypertensive dogs. It is thought that in dogs these changes



Fig. 4.—Section of kidney removed at necropsy (hematoxylin and eosin stain).

result from an increase in pressure throughout the arterial system except in the kidney, where the pressure is probably decreased by the narrowed renal artery.

Only information as to the time of the appearance of the atheromatous plaque in the renal artery is missing to make this case completely analogous to experiments in which one kidney is removed before or after the artery to the other kidney is clamped. This case represents the type of hypertension that occurs when ischemia of a kidney is mechanically produced. It does not explain the hypertension that is found in persons with intact renal arteries and kidneys.

This case illustrates another hazard accompanying nephrectomy in aged subjects.

#### CONCLUSIONS

In a case in which high blood pressure developed after removal of a ruptured but otherwise intact kidney, an atheromatous plaque was observed partially occluding the opposite renal artery.

Except for terminal pyelonephritis, the remaining kidney was relatively free from vascular, degenerative or inflammatory changes.

The situation is analogous to experiments in which hypertension is produced in dogs by partially clamping the artery to one kidney and removing the other kidney.

No analogous case was found in the literature.

## THE PELVIC JOINTS DURING PREGNANCY AND LABOR

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Since ancient times there has been a sustained interest in the role of the pelvic joints during pregnancy and labor. Hippocrates, Avicenna, Pare, Vesalius, Mauriciau, Smellie and Baudelocque<sup>1</sup> were fascinated by the potential influence of gestation on the pelvic articulations. A review of the modern literature reveals a perennial inquisitiveness equal to that of the



Fig. 1.—Primipara with a 2 to 3 mm. symphyseal span prior to the onset of labor.

ancients. Since 1920 no less than 200 publications have appeared on this subject. X-ray studies have engendered in recent years a renaissance of attention not only to the joints of the pelvis but also to greater precision in pelvimetry, the mechanics of pelvic inclination, cephalometry and the anthropologic significance of pelvic types. For over thirty years the roentgenogram has been used for pelvimetric studies, and such studies have culminated in the masterful work of Thoms,<sup>2</sup> Jarcho, Caldwell,<sup>3</sup> Moley<sup>4</sup> and others.

From the obstetric and roentgenographic departments of the Swedish Hospital. Read before the Section on Obstetrics and Gynecology at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 15, 1938.

1. Baudelocque, Jean-Louis: A Compendious System of Midwifery, edited by W. P. de Wees, Philadelphia, H. C. Carey & I. Lea, 1824.
2. Thoms, Herbert: Relaxation of Symphysis Pubis in Pregnancy. *J. A. M. A.* 106: 1364-1366 (April 18) 1936; *Surg., Gynec. & Obst.* 56: 97 (Jan.) 1933; *ibid.* 60: 680 (March) 1935; *Brit. M. J.* 2: 210 (July 31) 1937; *Radiology* 21: 125-130 (Aug.) 1933.
3. Caldwell, W. E., and Moley, H. C.: *Am. J. Obst. & Gynec.* 26: 497-505 (Oct.) 1933.
4. Moley, H. C.: *Am. J. Roentgenol.* 30: 111-114 (July) 1933.

Interspersed throughout the many splendid contributions to osteology and mensuration of the female pelvis are scores of reports on the spontaneous separation of the symphysis during labor. Frequent reports of sacro-iliac trauma are also available. This report is not concerned with the obviously traumatic separation of the symphysis. We have confined our observations entirely to physiologic diastasis.

Duncan<sup>5</sup> in 1868 described normal sacro-iliac separation in cows at term and reflected on a potentially similar phenomenon in woman. It is common knowledge that the guinea pig and other lower animals undergo physiologic separation of the symphysis in labor. Baudelocque,<sup>1</sup> examining some twenty women who died in labor, found no pelvic diastasis. Cantin<sup>6</sup> found increased mobility in the joints of 490 of 500 pelves during pregnancy. Lynch<sup>7</sup> observed a constant widening of the sacro-iliac spaces during pregnancy. Roberts<sup>8</sup> stated that additional separation of the pelvic bones in labor is very slight as observed in a few cases, and he observed that an extreme Walcher position effects no additional widening of the symphysis. De Lee<sup>9</sup> concluded that "since it requires the enormous force of from 400 to 2,600 pounds to disrupt the pelvic girdle, some inherent weakness of the joints must pre-exist." Thoms<sup>2</sup> observed no relationship between the amount of symphyseal widening and pelvic type, i. e. gynecoid, android, anthropoid, platypelloid or flat, but he stated that relaxation of the ligaments and joints is greatest in the last half of pregnancy. Bertin<sup>10</sup> inferred from x-ray studies that "contracted pelves, especially the justminor and funnel varieties, because the expulsive force acts in the narrow transverse diameter, predispose to separation of the pubic bones." Abramson, Roberts and Wilson<sup>11</sup> expressed the belief that the symphysis widens an average of 7 or 8 mm. in pregnancy and that the maximum separation is reached between the fifth and the seventh month. In contrast, Reis, Baer, Arens and Stewart<sup>12</sup> were unable to demonstrate any change in the pubic articulations of eighty consecutive women. They concluded that any increase in the span of the pelvis takes place only during labor.

In a previous roentgenographic study<sup>13</sup> of a small series of pregnant women, it was found that relaxation of the pelvic joints in pregnancy is not sufficient to enlarge the pelvic girdle enough to convert potentially difficult labor into uncomplicated labor. Although a vast amount of investigation has been conducted concerning the influence of pregnancy on the pelvic joints, there has been no inquisition as to the effects of mobility of joints on the course of labor. The literature has not revealed to us studies by roentgenograms contrasting in any given patient the antepartum status of the pelvic joints with their status in labor. Lynch has compared roentgenograms of the symphysis of non-pregnant controls with similar pictures of parturient women.

With this in mind, we studied a series of patients for whom roentgenograms were made near term and

5. Duncan, J. M.: *Researches in Obstetrics*, New York, W. Wood & Co., 1868.

6. Cantin, Louis: *Relâchement des symphyses et arthralgies pelviennes d'origine gravidique*, Thèse de Paris, 1899.

7. Lynch, F. W.: *Surg., Gynec. & Obst.* 30: 575-580 (June) 1920.

8. Roberts, R. E.: *Proc. Roy. Soc. Med.* 27: 1225 (July) 1934.

9. De Lee, J. E.: *Principles and Practice of Obstetrics*, ed. 4, Philadelphia, W. B. Saunders Company, 1924.

10. Bertin, E. J.: *Am. J. Roentgenol.* 30: 797-803 (Dec.) 1933.

11. Abramson, Daniel; Roberts, S. M., and Wilson, P. D.: *Surg., Gynec. & Obst.* 58: 595 (March) 1934.

12. Reis, R. A.; Baer, J. L.; Arens, R. A., and Stewart, Ellen: *Surg., Gynec. & Obst.* 55: 336 (Sept.) 1932.

13. Thorp, D. J.: *Am. J. Obst. & Gynec.* 35: 265 (Feb.) 1938.

again, in identical views, during the first stage of labor. Our purpose was, first, to determine whether any intrapartum separation of the pelvic joints occurs. Secondly, we sought to determine whether physiologic separation might effect an increase in the area of the superior strait which might expedite the course of labor.

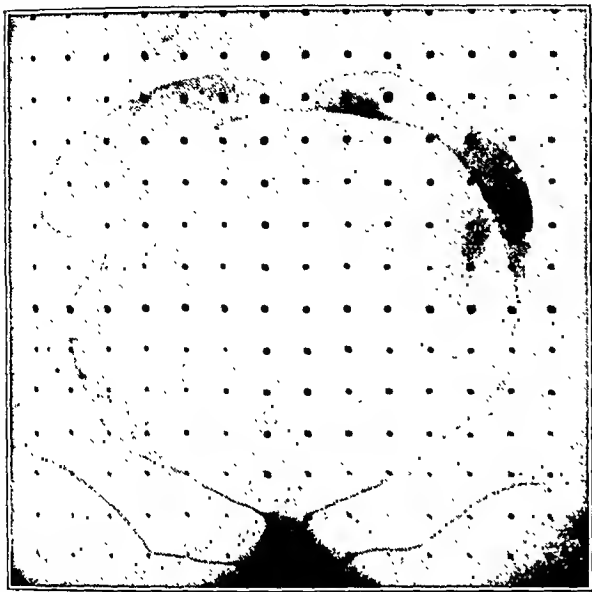


Fig. 2.—The patient shown in figure 1, with a 9 mm. span at the symphysis after five hours of active labor.

Roentgenograms were made of each patient during the last two or three weeks of pregnancy. The patient was frequently placed in the supine position that adequate visibility of the articulations might be secured. For the purpose of studying the influence of mobility of the joints on the area of the superior strait, pelvigrams, after the method of Thoms, were made. For

TABLE 1.—Distribution of Patients According to Parity

	Number	Percentage
Nulliparae.....	54	69.2
Primiparae.....	12	15.4
Pariparae.....	10	12.8
Caesarean section.....	2	2.6
Total.....	78	

these the lumbar spine was arched in order to bring the plane of the inlet parallel to the plane of the x-ray table. Next, careful measurements were taken from fixed bony landmarks<sup>14</sup> to the plane of the table, in order that the perforated lead grid might be placed exactly at the position of the inlet after the patient left the table. The lead grid is solely to imprint the film with dots at centimeter intervals for convenience of mensuration. A second picture was taken at the height of a uterine contraction after the first stage of labor was well advanced. For this film the position of the patient, exposure time, target distance and voltage were identical with those employed for the initial pelvigram.<sup>15</sup>

Seventy-eight cases were analyzed. Those involving complications of pregnancy or labor were discarded and

14. Anterior landmark, central point of upper border of symphysis; posterior landmark, depression below fifth lumbar spinous process.  
15. Distance, 30 inches; time, three-fourths second; voltage, 76 kilovolts; milliamperes, 300.

not included in this total. X-ray pelvimetry revealed no well defined deviations from normal in the series. No inductions of labor were instituted, although sixteen patients were from three to sixteen days postmature, and premature rupture of the membranes occurred in four primiparas. The age range was from 19 to 37 years. All the women were white (table 1).

As attention is directed largely to the first stage of labor, the details of the second and third stages will not be unnecessarily elaborated. An analysis would not be complete, however, without the figures for these stages (table 2). Multiparity seemed not to be of

TABLE 2.—Duration of Each Stage of Labor According to Parity

Para	I	II	III	IV	Average
1st stage.....	10*21'	8*28'	6*33'	3*28'	7*13'
2d stage.....	53'	38'	14'	8'	33'
3d stage.....	16'	18'	11'	13'	15'
Average totals.....	11*30'	9*24'	7*18'	3*49'	8*01'

significance in our eventual conclusions. While the size of the infant might be expected to be an influence and lead to erroneous conclusions regarding the pelvic joints during labor, there was no correlation between supernormal weight and maximum separation of the pelvic articulations. The infants weighed from 5 pounds 1 ounce (2,296 Gm.) to 9 pounds 14 ounces (4,479 Gm.). Some of the maximum symphysial separations occurred in patients who were delivered of babies of less than 6 pounds (2,850 Gm.).

Of the seventy-eight patients studied, thirty-four were shown to undergo definite diastasis of the symphysis, an incidence of 43.6 per cent (table 3).

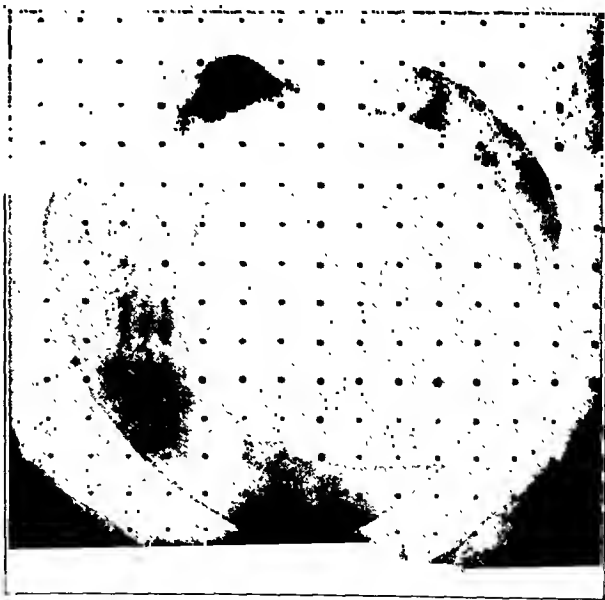


Fig. 3.—Primipara with a 2 mm. span at the symphysis before labor.

The average span in the articulations was 5 mm., while one patient had a 12 mm. symphysial separation. Twenty-one women showed separation in the sacro-iliac joints of 2 or 3 mm. In a few patients we observed this widening in the sacro-iliac joints when no separation of the symphysis occurred. However, separation was usually found in all three articulations. The right sacro-iliac span was commonly wider than the

left. This asymmetry of mobilization is not satisfactorily explained.

Intrapartum changes in the area of the superior strait could not be demonstrated as a result of separation in any of our roentgenograms. This holds even for the woman with a separation of 12 mm.

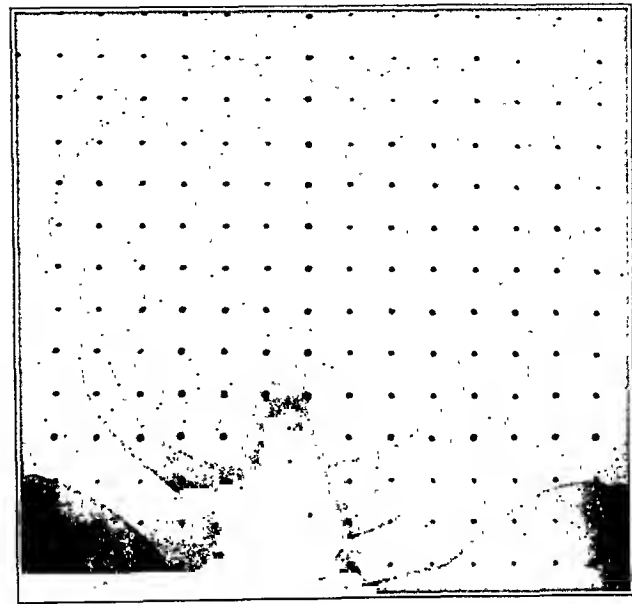


Fig. 4.—The patient shown in figure 3, with an 8 mm. separation of the symphysis after three and one-half hours of labor.

At the beginning of this work we intended only to determine the incidence of visible physiologic separation of the pelvic joints in labor and its effect on the area of the inlet. After a number of antepartum examinations had been made with the dual x-ray technic described, it was considered of equal interest in subsequent cases to correlate the pelvigraphic observations with a close study of each course of labor. Analysis of seventy-eight cases of the series is shown

Table 3.—Analysis of the First and Second Stages of Labor According to Separation or Nonseparation \*

	Separation: Average: 5 Mm. 34 Cases (43.6%)		Nonseparation: Average: 5 Mm. 44 Cases (56.4%)	
	Primiparas	Multiparas	Primiparas	Multiparas
Average, 1st stage.....	8°25'	7°37'	11°29'	6°25'
Average, 2d stage.....	1° 3'	35'	49'	29'
Average of both.....	9°25'	8°15'	12°12'	6°54'

\* A comparison of the two primiparous groups is of special interest.

TABLE 4.—Comparison of Twenty Primiparas from Each Group \*

	Separation: Average: 5 Mm.	Nonseparation
Average, 1st stage.....	8°25'	13°45'
Average, 2d stage.....	1° 3'	49'
Average.....	9°25'	13°37'

\* Note the difference in the length of the first stage and its influence on the average of stages 1 and 2.

Attention was directed to the apparent influence of symphyseal separation and sacro-iliac mobilization on the course of occiput posterior position. In thirteen of thirty-four cases of separation the infant was in the occiput posterior position in early labor, while this position was revealed in only six of the forty-four cases without separation (table 5).

Spontaneous rotation of the occiput was observed during the first stage of labor in eleven of the nineteen cases of posterior position discovered in the entire series of seventy-eight cases (table 6). Roentgenograms fortunately were secured prior to rotation in nine of the eleven cases. The minimum pubic separation in these nine cases was 7 mm. It is significant



Fig. 5.—A greater separation of the right sacro-iliac articulation than of the left.

in table 3, where thirty-four cases of definite separation of the symphysis are contrasted with forty-four in which there was no separation. It will be noted that among primiparas who had definite separation of the symphysis, the average first stage of labor was practically three hours shorter than the average first stage of those without separation. Furthermore, the second stage of labor was definitely longer in all the cases in which there was pubic diastasis. The fourteen multiparas included with the thirty-four women showing separation experienced prolongation of the first stage of labor of one hour and twelve minutes. The ultimate course of labor was consistently more favorable in the primiparas whose pubic joints yielded to the influence pro-

ducing separation, as indicated by the average values for the total of stages 1 and 2.

The twenty primiparas showing separation of the joints were compared with twenty consecutive primiparas from the group of forty-four women who did not show separation (table 4). This demonstrated more directly that those with separation experienced shorter labor than those without separation. Table 4 presents the striking difference in the length of the first stage of five hours and twenty-three minutes. The combined first and second stages demonstrated a difference of four hours and nine minutes in favor of the women with separation.

that nine of the women experienced spontaneous rotation and at the same time showed a minimum pubic separation of 7 mm. The remaining four patients requiring manual aid showed a separation of only 3 to 5 mm. Only two of the forty-four patients without separation experienced spontaneous rotation. One patient exhibiting a pubic separation of 9 mm., in whom spontaneous rotation took place, was delivered

of an infant weighing only 5 pounds 4 ounces (2,381 Gm.), while another woman experienced spontaneous rotation after we observed an increase of 7 mm. in the symphyseal span and was delivered of a baby weighing 6 pounds 1 ounce (2,750 Gm.). Not one of the babies in the series of thirty-four cases of separation was abnormally large.

COMMENT

The purpose of this study was to determine whether the pelvic joints are mobilized and separated in labor. Separation of the symphysis in labor is frequent enough (an incidence of 43.6 per cent), and wide enough to stimulate speculation as to its cause and its effect. Hisaw<sup>16</sup> expressed the belief that a fraction of the corpus luteum acts on the articular ligaments in lower animals to produce relaxation and marked separation of the pelvic joints in late pregnancy and labor. It is quite possible that a similar hormonal influence is exerted on the human bony structures. Certainly we were dissuaded from concluding from this series that sheer mechanical force, such as might result if the infant was large or if there were tetanic uterine contractions, plays any part. No visible enlargement of the superior strait could be noted in patients with even maximum separation.

It is our belief that in at least nine cases of occiput posterior position there was benefit from physiologic separation of the symphysis pubis in labor. In these nine cases separation was noted preceding spontaneous rotation in labor in all but one, which was roentgenographed after rotation, whereas no pubic separation was noted by roentgenogram from one to three weeks ante partum. Truly this is too small a number from which to draw conclusions governing the multitude, but it does suggest a definite explanation for the frequent autonomous correction of posterior positions.

Finally, there is in our series definite evidence that labor is considerably shortened by the average physiologic separation of the pelvic joints, particularly in the primipara. The multiparas who showed conspicuous separation of the pelvic joints paradoxically had a

TABLE 5.—Presentation and Position  
(Early Labor)

	Separation, 34	Nonseparation, 44
O. L. A. ....	16	29
O. R. A. ....	3	9
O. L. P. ....	6 } 13	2 } 6
O. R. P. ....	7 }	4 }
S. L. A. ....	1	0--
Twins O. L. A. ....	1	0

longer average labor than those who had no separation. This could be explained by the fact that many of the larger babies were born to these women, and hence retardation of labor resulted from purely mechanical influences.

Concerning the sacro-iliac articulations, it was observed that twenty-one women showed separation of 2 to 3 mm. in one or both joints, the right joint being more commonly involved. As previously stated, however, this asymmetry of mobilization is not satisfactorily explained.

The postpartum effect of joint mobilization was noteworthy only in cases of maximum widening of the sacro-iliac articulations. Three women suffered pain low in the back for several months, requiring the use

of supports. In contrast no woman with even the maximum widening of the symphysis suffered pain or disability in that region after leaving the hospital.

SUMMARY

Physiologic diastasis of the pelvic articulations in lower animals has been demonstrated.

All observations heretofore have been concerned with the influence of pregnancy on the joints. A portion of this report pertains to the influence of separation of the joints on the course of labor.

TABLE 6.—Occiput Posterior Position

	Separation, 34	Nonseparation, 44
Number of patients.....	13 (38.2%)	6 (13.6%)
Spontaneous rotation.....	9* (26.5%)	2 (4.54%)
Roentgenogram previously made.....	8	1
Manual aid required.....	4†	4

\* Minimum pubic separation in nine cases, 7 mm.  
† Average pubic separation in four cases, 4 mm.

Seventy-eight cases are reported, in thirty-four, or 43.6 per cent, of which there was a definite widening in the symphysis pubis, averaging 5 mm.

No intrapartum increase in the area of the superior strait could be demonstrated.

In thirteen cases of separation of the joints the infant was in the occiput posterior position, and in nine rotation took place spontaneously after a separation of the symphysis of 7 mm. or more.

In four cases of occiput posterior position manual aid (rotation) was required, and x-ray examination previously had revealed an average of only 4 mm. of symphyseal separation.

Six cases of occiput posterior position were observed in the series of forty-four without separation. In only two of these did rotation take place spontaneously, manual aid being required in the remaining four.

In all cases in which there was x-ray evidence of pubic widening greater than 3 mm. the labor was shorter than in the forty-four in which there was no demonstrable widening.

Separation of the sacro-iliac joints was noted in twenty-one women, but no correlation was noted between this condition and the course of labor.

Postpartum sequelae were found in cases of sacro-iliac diastasis, but no subjective or objective symptoms were observed in cases of separation of the symphysis pubis.

Medical and Dental Building.

ABSTRACT OF DISCUSSION

DR. ALICE F. MAXWELL, San Francisco: This report draws attention to the physiologic effects of pregnancy on the pelvic girdle. In recent years, clinical observations and roentgenologic studies have proved that relaxation of the pelvic ligaments and diastasis of the articulations are normal occurrences in pregnancy. Such changes occur so early in pregnancy that mechanical factors as causative agents are eliminated. Research data indicate that articular relaxations in pregnancy are due to hormonal influences. Hisaw in 1929 presented evidence that a secretion of the corpus luteum caused a diastasis of the symphysis in the pregnant guinea pig; he designated this specific secretion "relaxin." Later it was demonstrated that the injection of the serum of pregnant rabbits, dogs, pigs and mares caused a widening of the symphysis in experimental animals in natural or artificial estrus. A similar effect was obtained in castrated male animals subsequent to previous sensitization by estrogen. Recently, identical joint changes have been produced

16. Hisaw, F. L., in Allen, Edgar: Sex and Internal Secretions, Baltimore, Williams & Wilkins Company, 1932, chap. 2.



by injecting pregnant human serum into estrogen-sensitized animals of either sex. This material, as reflected in articular changes, can be demonstrated in the serum of the pregnant woman as early as the eighteenth to the twentieth week; it is invariably present in the middle trimester of pregnancy and is questionably present or absent in the blood in the last trimester. Such evidence connects the hormone with activity of the corpus luteum, yet at present an argument exists as to whether this relaxation is the result of estrogen per se or a synergistic effect of estrogen plus an additional hormonal factor. That estrogen alone can effect pelvic girdle relaxation is shown by x-ray demonstrations of articular diastasis during menstruation and the frequent association of the catamenia with sacral backache. The significance of pelvic girdle relaxation during pregnancy is a matter of interest and speculation to obstetricians. All are familiar with the frequency of symptoms of sacro-iliac strain or slip in pregnancy despite perfect orthopedic balance and abdominal support; occasionally the pregnant woman complains of pain over the symphysis, and in these patients palpation of the articulation during locomotion will reveal a distinct movement of the joint. Diastasis of the pelvic joints inevitably effects an increase of pelvic spacial capacity; and an enlargement of the passages, however minimal, may be a determining factor in the outcome of labor. The advantages of various obstetric postures in labor, often instinctively assumed by the women, are facilitated by ligamentary and articular softening, for such positions are often unendurable in the nonpregnant female and impossible for the human male. The question of progressive diastasis of the pelvic articulations during labor is problematic. The authors have emphasized that they found no relation between joint separation in labor to the type of pelvis, pelvic diameters or the size of the child. The difficulties of obtaining precise and identical x-ray exposures of the pelvis during the antepartum period and in women during active labor are apparent. Yet such exactness of x-ray studies is essential for comparative pelvic mensuration.

## A NEUROLOGIC NOTE ON TRAFFIC LIGHTS

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The provocative writings of Lewis Mumford, especially his "Technics and Civilization"<sup>1</sup> and his "The Culture of Cities,"<sup>2</sup> offer a challenge. In tracing the evolution of the machine, he emphasizes its effect on us as living beings. The machine has grown, he says, independently of biologic considerations; has often made its own rules; has commonly become autonomous—cancerous—to the resultant degradation of man.

Persuasive proofs of this contention are many. The heyday of the rule of the machine over mankind was the period when coal was fuel, steam the prime mover, and iron the essential building material. He calls this, after Patrick Geddes, the paleotechnic period. Dominant roughly between 1850 and 1890, it gave rise to the West's worst cities, Dickens's "Coketowns." They remain as Manchester, Leeds, Birmingham, Merseburg, Essen, Elberfeld, Lille, Newark, Pittsburgh, Youngstown and many more. From gray to black, covered by a dome of smoke which blots out the sun and blackens the lungs of the human beings enclosed by it, these cities remain an architectural proof of the triumph of the machine over the human spirit.

By virtue of technical advance, especially in the development of the water turbine and the widespread use of electrical energy, a new economy, the neotechnic,

began to emerge in the eighties of the last century. The physical characteristics of cities changed with the substitution of water power for coal and electricity for steam, and man profited thereby. But Mumford does not stop at this point. He sees a new relation of man to the machine. This is his biotechnic economy, which he describes as follows:

It refers to an emergent economy, already separating out more clearly from the neotechnic (purely mechanical) complex, and pointing to a civilization in which the biological sciences will be freely applied to technology, and in which technology itself will be oriented toward the culture of life. The key inventions, on the mechanical side, are the airplane, the phonograph, the motion picture, and modern contraceptives, all derived directly, in part, from a study of living organisms. The application of bacteriology to medicine and sanitation, and of physiology to nutrition and daily regimen, are further marks of this order—parallel applications in psychology for the discipline of human behavior in every department are plainly indicated. In the biotechnic order the biological and social arts become dominant: agriculture, medicine, and education take precedence over engineering. Improvements, instead of depending solely upon mechanical manipulations of matter and energy will rest upon a more organic utilization of the entire environment, in response to the needs of organisms and groups considered in their multifold relations: physical, biological, social; economic, esthetic, psychological.

To the skeptical eye this may seem the troubled dream of a utopian and a poet, but in the very poetry of such a vision lies its real worth.

If we look at the machines all about us, and criticize them according to this biotechnic standard, we find that most of them are grossly inefficient, that technically they are not oriented toward the culture of life. The traffic light commonly in use from one end of our civilization to the other is a small case in point. From a purely mechanical point of view it is a most satisfactory device, but from a physiologic standpoint it is utterly bad. Technically there are many better forms of traffic lights already available, but there has been no synthesis of known technical advances in this field with known physiologic data to produce a biologically better traffic light.

The behavior of the motor car driver when he is confronted by a traffic light is the response to a conditioned reflex. Reduced to its simplest terms, the driver is conditioned to step on one pedal with his right foot—the brake—if the light is red, and on another pedal—the accelerator—if it is green. Furthermore, the green light may be classified as an excitatory reflex, prompting forward motion, and the red light may be considered as an inhibitory reflex, calling for a stoppage of forward motion. Therefore, we may call these reflexes those of "excitation" and "inhibition" in the physiologic sense. When regarded singly, each is simple and effective.

However, they cannot be regarded singly because they follow in quick succession and because they are mutually antagonistic. The driver often comes upon a traffic light quickly, and he does not know how soon it will change. Although it may be green at a given second, and thereby prompt him to press down the accelerator pedal (excitatory reflex), he knows experientially that, before he reaches the intersection, the antagonistic conditioning stimulus—the red (inhibitory) light—may have supervened, calling for a different response in the right leg.

From the Physiological Laboratory in the University of Cincinnati.  
1. Mumford, Lewis: *Technics and Civilization*, New York, Harcourt, Brace & Co., 1930.  
2. Mumford, Lewis: *The Culture of Cities*, New York, Harcourt, Brace & Co., 1938.

This quick succession of antagonistic conditioned reflexes and this confusion in visual conditioning stimuli have been studied carefully by Pavlov<sup>3</sup> in the dog. He gives the term "collision" to the phenomenon, and he finds that such juxtaposition of excitatory and inhibitory reflexes leads to a pathologic nervous state. In the experimental dog he has shown that "collision" occurs in two situations entirely parallel with those commonly confronted by the motor car driver when he is faced by a traffic signal; first the collision occasioned by the rapid succession of reflexes of excitation and inhibition heaped closely on one another in time; and second the collision occasioned by a confusion of visually similar stimuli. It is well to review his experiments and to compare his results with the human being in like circumstances.

**EXPERIMENT 1.**—"Collision" resulting from a quick succession of excitatory and inhibitory conditioned reflexes.

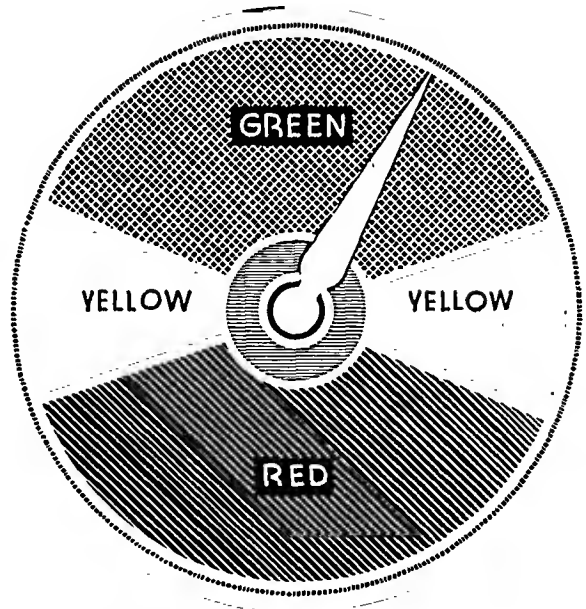
A dog was conditioned to respond to a rhythmic mechanical irritation of the skin with the "food reflex." A regular tapping of an area of the dog's skin was repeatedly followed by feeding. Soon the tapping of the skin alone provoked the expectation of food in the dog, as evidenced by a copious flow of saliva, measured quantitatively, and by a turning of the dog's head toward the foodbox. When this reflex became stable, i. e. when rhythmic tapping of a given area of skin invariably provoked the same salivary and motor response, a second conditioned reflex was elaborated in the dog. The same area of skin was used, the same tapping stimulus was used, but the rhythm or rate of tapping was altered. This second stimulus was never followed by the giving of food. Soon the second response became established. It was inhibitory in type, characterized by a cessation of normal salivary flow and a failure to turn the head toward the foodbox. When both reflexes were thus established and defined quantitatively, Pavlov began to apply one stimulus immediately after the other, without any interval; i. e., he began to apply the inhibitory stimulus immediately after producing the excitatory reflex. This led to a striking pathologic state in the dog. The animal, following this "collision" occasioned by rapid succession of antagonistic reflexes, no longer was docile and gentle but became very excited and irritable (nervous). There followed a complete loss of all conditioned reflexes in the animal, and they returned only after many weeks in a paradoxical fashion. The slow return to normal was effected by an actual "treatment" of the dog, which included rest and daily rectal instillations of bromides.

**EXPERIMENT 2.**—"Collision" resulting from confusion of visually similar stimuli.

A dog was conditioned to respond to food positively by a circle of light flashed on a screen. When the reflex became stable, the stimulus invariably evoked a generous flow of saliva and a turning of the dog's head toward the foodbox: the typical conditioned response, the "food reflex," which Pavlov analyzed so carefully for many years. The dog was then conditioned negatively to a light stimulus of equal intensity but of different shape. The stimulus in this case was an ellipse, of the same intensity and general size as the circle, but in which the diameters were as 2:1. This second reflex, a differentiation of the first, was made stable by repeated trials and came to provoke the typical inhibitory response, a drying up of the normal salivary flow and a failure to turn toward the food source. The negative stimulus was then altered by making the ellipse progressively more circular on repeated trials. The differentiation persisted and functioned properly until the ellipse became almost circular—until its diameters came to be as 9:8. The ellipse then lost its inhibitory character, as did all the other more elongated ellipses. All shapes of ellipses now became excitatory even though no food was offered. The dog, which formerly stood quietly on his bench,

now was constantly struggling and howling. After rest and treatment with bromides, the conditioned reflexes and their differentiation were again elaborated, more slowly and more carefully. However, when the ellipse was contracted again to the place where its diameters were as 9:8, i. e. when it became almost circular, the dog again lost his differentiated response and fell once more into his former pathologic state. The experiment could not be continued; the dog was too upset. He had acquired a condition which Pavlov called a traumatic neurosis.

In the present day traffic light we have a situation that parallels both these experimental instances. The quick succession of stimuli of excitation and inhibition occur in the traffic light changes just as they occurred in experiment 1. The potentially changing color of the light, from red to green or vice versa, leads to a confusion in stimulus similar to the confusion of the stimulus of the circle and the almost circular ellipse in the second experiment. Careful appraisal, furthermore, of one's own bodily reactions, or careful observation



Traffic light consisting of a circular glass panel, illuminated from the rear, divided into colored sectors. The hand, revolving clockwise, shows how much green or red remains.

of the driver of a car in which one is a passenger, leads to the realization that the human being, as well as the dog, "falls into a state of excitation," to use Pavlov's words, following a situation in which a "collision" of traffic light stimuli has occurred. I have noted a quickening of my pulse by twenty-five beats above the normal, a pilomotor response on my forearms, a dryness of the mouth, a sudden excessive sweating of the palms, a feeling of epigastric distress, a sensation of inward tremulousness, and even observable tremor of the extended hands, immediately following such a "collision" on repeated occasions while driving. Occasional quick glances into the rear vision mirror have shown an unusual pupillary dilatation as well.

These observations point to the fact that the human bodily reactions to such a situation represent an autonomic discharge commonly associated with states of excitation and anxiety—that the confusion of traffic light conditioned reflexes leads to what may be called an "anxiety neurosis in miniature." When a whole series of these experiences follow closely on one another after long hours of driving in metropolitan

3. Pavlov, I. P.: Lectures on Conditioned Reflexes, translated by W. H. Gantt, New York, Liveright Publishing Corporation, 1928, p. 339 et seq.

areas, there is commonly a prolonged bodily reaction of this kind which produces a conscious restless anxious exhaustion.

What, then, can be done to eliminate this collision of exciting and inhibiting reflexes and the resultant pathologic nervous state? What technical advances are at hand to apply to these physiologic data to make of the traffic light a more efficient biotechnical device?

Inventors have sensed this problem, and there are now in the United States Patent Office patented devices by Altman,<sup>4</sup> Degner,<sup>5</sup> Olafson<sup>6</sup> and Schubert<sup>7</sup> to improve the traffic light. From a physiologic point of view, the last is probably the best. It is constructed as follows: A circular glass panel, illuminated from the rear, is divided into sectors, the upper green, the lower red, and two small intermediate sectors at each side yellow. A hand, similar to a clock's hand, revolves slowly around the circular panel in a clockwise direction, as shown in the accompanying illustration. The driver may see at a glance how much green or red remains on the panel and by noting the speed of the revolving hand he may respond to the stimulus more rationally. Two stimuli now evolve into a flowing continuum of stimulation rather than a rapid succession of colliding antagonistic patterns. The signal itself, being more graphic, is more easily defined consciously and therefore becomes a more efficient physiologic stimulus.

Traffic lights of this kind are to be seen in operation, though far too rarely. It is altogether fitting that the land of Pavlov's birth should be an early employer of such a device. In the summer of 1934 I saw such a signal in operation at the southern end of the Red Square in Moscow. Another was to be seen in the Bahnhofstrasse in Zurich, Switzerland, in 1937. Perhaps there are many others, but at best there are far too few. The universal adoption of a traffic signal of this or similar type would undoubtedly bring a real measure of relief to the motoring public, for, as Pavlov states, "this conflict and this balancing are not too easy for the nervous system."

#### SUMMARY

Lewis Mumford has pointed out that in the employing of machines we have too often forgotten their biologic effects in our constant search for mechanical perfection. He envisions a new period in technical history, the biotechnic era, when the machine will be restudied and redesigned on a physiologic basis—oriented toward the culture of life. The ubiquitous traffic light is examined in the light of this criticism and, although its mechanical efficiency is unquestioned, it is found to be bad physiologically—bad for us who have to live with it. The adoption of another form of traffic signal, less exhausting to the nervous system, is desirable.

726 Carew Tower.

4. Altman, V.: U. S. Patent Office No. 1,751,969, March 25, 1930.
5. Degner, G. C., and others: U. S. Patent Office No. 1,522,617, Jan. 13, 1925.
6. Olafson, A. O.: U. S. Patent Office No. 1,719,020, July 2, 1929; No. 1,749,390, March 4, 1930.
7. Schubert, P.: U. S. Patent Office No. 1,847,903, March 1, 1932.

**The Incubus of Galen.**—It was in this century that such scientists as Copernicus, Vesalius (1514-1564) and Paracelsus (1493-1541) lived and worked. There was still much medievalism in the beliefs of these men; but they were endeavoring to do, and did, considerable independent thinking. In the domain of medicine all thinkers were struggling to get rid of the incubus of Galen.—Hurd-Mead, Kate Campbell: *A History of Women in Medicine*, Haddam, Conn., the Haddam Press, 1938.

## COLD VACCINES

AN EVALUATION BASED ON A CONTROLLED STUDY

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AND

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Our reasons for adding to the already voluminous literature on the use of vaccines for the prevention of colds are, first, that few studies of these vaccines have been adequately controlled and, second, that in spite of their questionable value cold vaccines are administered to hundreds of thousands of persons throughout the country each year. Physicians in private practice have little or no opportunity to evaluate such preparations and so are apt to base their opinions as to value on the reports of individual patients. On the other hand, organizations such as college and industrial health services, which are charged with the prevention of illness among large groups of persons, have a special interest in colds and have made various attempts to evaluate vaccines and other preventive measures. If vaccines are effective in a considerable proportion of cases and are harmless, they should be used extensively; if not, doctors and patients should cease wasting their time and money on them.

The study here reported extended over a period of three years and included work with one vaccine administered subcutaneously and two administered orally. Until recently all cold vaccines were injected either subcutaneously or intramuscularly, but during the past few years several vaccines for oral use have been developed and are already being widely utilized.

#### TECHNIC OF STUDY

The subjects were all students of the University of Minnesota who volunteered to participate in the study because they were particularly susceptible to colds. When they reported for their first vaccine treatment, the records of their physical examination were inspected and they were questioned concerning the symptoms which usually accompanied their colds. This procedure was followed in order to exclude from the study persons whose difficulties seemed to be due primarily to chronic sinusitis or allergic rhinitis. At the same time a record was made of each student's recent history of acute infections of the upper part of the respiratory tract, with particular attention to the number and the severity of colds experienced during the previous year and the amount of time lost from school on account of them.

**Experimental and Control Groups.**—At the beginning of each year of the study students were assigned at random and without selection to a control or to an experimental group. The students in the control groups were treated in exactly the same manner as those in the experimental groups but received placebos instead of vaccine. All students thought that they were receiving vaccine and so had an unprejudiced attitude toward the study. Even the physicians who saw the students at the health service when they contracted colds during the period of the study had no information as to which group they represented.

From the Students' Health Service and the Department of Preventive Medicine and Public Health of the University of Minnesota.  
Read before the Section on Preventive and Industrial Medicine and Public Health at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 16, 1938.

**Reporting of Colds.**—The students in all groups were instructed to report to the health service whenever a cold developed and to keep a record of each cold of more than twenty-four hours' duration. A report was obtained from each student monthly during the first year of the study and quarterly during the second and third years. The physicians who cared for the students who reported to the health service with colds made notations on their records concerning the severity and the type of the cold in each case. These records were checked later against the reports which were made by the students.

There might be some objection to the use of subjective as well as objective criteria as a basis for the determination of results, but our experience in the study of colds over a number of years indicates that the appearance of the nasal and nasopharyngeal mucous membranes is not so dependable a criterion on which to base the diagnosis of a cold as is the patient's report of his symptoms.

**Loss of Time.**—At the beginning of the study each student was instructed to keep a record of the number of days which he lost from school because of colds. These reports were collected quarterly and were checked by the conferences which the doctors in charge of the study had with the students.

At the end of each year reports as to the incidence of colds and the time lost from school were summarized according to experimental and control groups.

SUBCUTANEOUS ADMINISTRATION OF VACCINE

No attempt will be made to review the many reports<sup>1</sup> on subcutaneous vaccination against colds. Some of the more uncritical workers have been enthusiastic about the value of these vaccines, but the better controlled studies indicate that little of value can be expected from their use.

**Vaccine Utilized.**—The vaccine selected for this study was standardized according to the milligrams of nitrogen per cubic centimeter, as follows: pneumococci 0.015 mg., streptococci 0.015 mg., Bacillus influenzae 0.01 mg., Micrococcus catarrhalis 0.0025 mg. and staphylococci 0.0075 mg. It was prepared by the so-called Kreuger method; that is, the organisms were destroyed mechanically instead of by heat. This method of preparation is supposed to provide a vaccine which is a superior antigen because the bacterial proteins have not been changed by heat. The evidence that the method is of practical value is not conclusive, but this vaccine was chosen for study because it has all the merits of heat-killed vaccines and possibly more.

**Dosage of Vaccine.**—The vaccine was administered hypodermically to the experimental group as follows: 0.5 cc. twice a week for three weeks and then 0.5 cc. every two weeks throughout the fall, winter and spring. The control group received injections of physiologic solution of sodium chloride administered in the same way, at the same intervals and throughout the same period. Our experience indicates that it is extremely important in such a study to treat the control group and the experimental group in exactly the same manner and not to use for control a group of persons who receive no treatment whatever.

**Results.**—Table 1 presents a summary of the results reported by the students who received the bacterial vaccine subcutaneously and by the corresponding control group during the years 1935-1936 and 1936-1937.

TABLE 1.—Results of Bacterial Vaccine Administered Subcutaneously

	Vaccinated Group			Control Group		
	1935-36	1936-37	Total	1935-36	1936-37	Total
Subjects who completed study.....	156	116	272	107	169	276
Percentage.....	94.0	89.0	92.0	57.0	88.0	87.0
Number of colds per person during previous year*						
(a) Average.....	6.0	5.6	5.9	5.4	5.7	5.6
			±0.14			±0.09
(b) Median.....	5.6	5.1	5.4	5.0	5.3	5.2
Number of colds per person during year of study						
(a) Average.....	1.5	1.3	1.6	2.4	1.8	2.1
			±0.05			±0.06
(b) Median.....	2.3	1.7	2.0	2.8	2.0	2.4
Differences between experimental and control groups						
(a) Average.....	-0.6	-0.5	-0.5±0.03			
(b) Median.....	-0.5	-0.3	-0.4			
Percentage differences						
(a) Average.....	-22	-27	-25			
(b) Median.....	-18	-15	-17			
Number of days per person lost from school						
(a) Average.....	1.0	1.3	1.1	1.1	1.0	1.0
(b) Median.....	0.7	0.8	0.7	0.7	0.7	0.7
Subjects who had no colds during year of study, percentage.....	18.0	23.0	20.0	6.0	13.0	11.0

\* Reported from memory.

The results have been tabulated so that comparisons can be made for each year separately as well as for the total experimental period.

Two hundred and seventy-two students in the vaccinated group and 226 in the control group completed the study, representing 92 per cent and 87 per cent, respectively, of the number who began it. These are high percentages in view of the fact that a considerable number of university students drop out of school during the course of the year for scholastic or other reasons.

The uniformity of the average number of colds which the students in the several groups reported that they had had during the year prior to the study indicates that the groups were well equated so far as susceptibility to colds is concerned.

During the two years of the study the experimental group reported an average of 1.6 colds a person yearly. This represents a reduction of 73 per cent from the average of 5.9 colds per person which the same students reported for the year prior to the study. Such a reduction would seem to be definite evidence of the value

1. These include:  
von Sholly, A. L., and Park, W. H.: Report on the Prophylactic Vaccination of 1,536 Persons Against Acute Respiratory Diseases, J. Immunol. 6: 103-122 (Jan.) 1921.  
Ferguson, F. R.; Davey, A. F. C., and Topley, W. W. C.: The Value of Mixed Vaccines in the Prevention of the Common Cold, J. Hyg. 26: 98-109 (March) 1927.  
Lempriere, L. R.: Catarrhal Vaccines in Public Schools, Brit. M. J. 1: 973 (May) 1929.  
Ward, R. V.: Three Years' Experience with Vaccination Against the Common Cold, Canad. M. A. J. 25: 408-412 (Oct.) 1931.  
Brown, W. E.: Vaccine in the Prevention of the Common Cold, Am. J. Hyg. 15: 36 (Jan.) 1932.  
Stollenberg, L.: Combating of Catarrhal Hospital Infections with Anticatarrhal Vaccines: Experiences in Children's Department of the University Hospital, Oslo, Acta paediat. 12: 169-180 (No. 4) 1932.  
Dochiz, A. R.; Mills, K. C., and Kneeland, Yale, Jr.: Disease of the Upper Respiratory Tract; Problems Connected with the Etiology and Prophylaxis, J. A. M. A. 101: 1441-1444 (Nov. 4) 1933.  
Kneeland, Yale, Jr.: Protection Afforded by Vaccination Against Secondary Invaders During Colds in Infancy, J. Exper. Med. 60: 655-660 (Nov.) 1934.  
Gyllensward, Curt: Anticatarrhal Vaccination in Homes for Children Under School Age, Acta paediat. (suppl. 1) 17: 78-90, 1935.

of the vaccine. However, when we turn to the summary of the reports from the control group we find almost as great a reduction; namely, from an average of 5.6 colds per person for the year prior to the study to 2.1 colds per person yearly during the period of the study. This is a reduction of 63 per cent and is as much as has been reported by most writers who recommend the vaccine.

TABLE 2.—*Subcutaneous Vaccination in Relation to Frequency of Colds*

	Less Than Six Colds in Previous Year*		Six or More Colds Previous Year*	
	Vaccinated Group	Control Group	Vaccinated Group	Control Group
Number of subjects.....	158	178	114	98
Average number of colds per person during previous year.....	4.1 $\pm$ 0.05	4.0 $\pm$ 0.04	8.4 $\pm$ 0.24	8.3 $\pm$ 0.35
Average number of colds during year of study	1.6 $\pm$ 0.06	2.0 $\pm$ 0.07	1.6 $\pm$ 0.08	2.2 $\pm$ 0.11
Difference between experimental and control groups.....	0.4 $\pm$ 0.09	.....	0.6 $\pm$ 0.14	.....
Percentage.....	-20.0	.....	-27.0	.....

\* Reported from memory.

The difference between the average number of colds per student in the experimental and in the control groups during the two years of the study is  $0.5 \pm 0.08$  colds per person yearly. This difference in favor of the vaccinated group, although statistically significant, is too small to be of practical importance. A similar comparison of the median number of colds reported by the experimental and by the control groups gives even less evidence of value of the vaccine.

The average and the median number of days lost per person from colds is essentially the same for the vaccinated and the control groups. The proportion of subjects who reported no colds whatever during the

TABLE 3.—*Results with Same Subjects in Different Groups*

Year	Number of Subjects	Treatment Group	Average Number of Colds per Person
First	25	Control.....	2.6
Second	25	Subcutaneous vaccination	1.9
First	30	Subcutaneous vaccination	1.9
Second	30	Control.....	1.7

TABLE 4.—*Cutaneous Sensitivity and Results of Vaccination*

	Average Number of Colds Yearly	
	Positive Cutaneous Test with Vaccine	Negative Cutaneous Test with Vaccine
Subcutaneous vaccination group..	1.4 (114 cases)	1.7 (140 cases)
Control group.....	2.0 (130 cases)	2.1 (127 cases)

period of study was 11 per cent for the control group and 20 per cent for the vaccinated group. If this group is excluded from our computations, we find that the average number of colds per person among those who had any colds was 2.5 for the vaccinated group and 2.7 for the control group. In other words, the margin of benefit in the vaccinated group is represented entirely by the difference of 9 per cent in the number who had no colds whatever.

In an effort to determine whether the reduction in colds was occurring in any particular group an analysis was made of the results among students who reported six or more colds as compared to those among students who reported less than six colds during the previous year. Table 2, which presents this analysis, shows no significant differences between the groups.

A few students participated in this study during both the years in which it was conducted. Twenty-five of these were in the control group the first year and in the vaccinated group the second year, thinking, of course, that they were receiving the same vaccine the two years. Table 3 shows that this group reported an average of 2.6 colds during the year in which they were in the control group and 1.9 colds during the year in which they were in the vaccinated group. On the other hand, thirty students who were in the vaccinated group the

TABLE 5.—*Results with Polyvalent Vaccine Administered Orally*

	Vaccinated Group			Control Group		
	1936-37	1937-38	Total	1936-37	1937-38	Total
Subjects who completed study.....	162	201	363	169	203	372
Percentage.....	83	80	82	87	81	84
Number of colds per person during previous year*						
(a) Average.....	5.6	5.6	5.6	5.7	5.2	5.4
(b) Median.....	4.9	5.6	5.3	5.3	5.2	5.2
Number of colds per person during year of study						
(a) Average.....	1.9	1.7	1.8	1.8	1.6	1.7
(b) Median.....	2.2	2.0	2.1	2.0	2.0	2.0
Difference between experimental and control groups						
(a) Average.....	+0.1	+0.1	+0.1			
(b) Median.....	+0.2	0	+0.1			
Number of days per person lost from school						
(a) Average.....	1.3	0.5	0.8	1.0	0.4	0.7
(b) Median.....	0.7	0.6	0.7	0.7	0.6	0.7
Subjects who had no colds during year of study, percentage.....	11	14	13	13	14	14

\* Reported from memory.

first year and in the control group the second year also reported somewhat fewer colds during the second than during the first year (table 3).

Thinking that the students benefited might be those who were sensitive to some of the organisms in the vaccine, we made an intracutaneous test with the vaccine on all subjects at the beginning of the study. The results, as shown in table 4, do not indicate that this procedure is useful in identifying the persons who may expect benefit from the vaccine.

#### ORALLY ADMINISTERED VACCINE

Rockwell, Van Kirk and Powell<sup>2</sup> have reported several studies which suggest that vaccines containing organisms of the respiratory group administered by mouth may be useful for the prevention of colds. Their studies contain control groups, but the subjects in these groups apparently received no treatment whatever. If this inference is correct, the results which this group reports cannot be accepted as comparable to the results reported by the experimental groups.

2. Rockwell, G. E.; Van Kirk, H. C., and Powell, H. M.: Oral Immunization to Colds, *J. Immunol.* **28**: 475-483 (June) 1935; Further Studies on Oral Immunization to Colds, *J. Lab. & Clin. Med.* **22**: 912-917 (June) 1937.



Through the courtesy of the producers, two types of cold vaccines for oral administration were studied. One of these is available commercially and widely used throughout the country; the other has been prepared and used more or less experimentally by Dr. E. C. Rosenow of the Mayo Clinic.

**Polyvalent Vaccine for Oral Administration.**<sup>3</sup>—This vaccine, containing 25 billion pneumococci, 5 billion *Haemophilus influenzae*, 15 billion streptococci and 5 billion *M. catarrhalis*, was used during the winters of 1936-1937 and 1937-1938. During the first year in which the orally administered vaccine was used a control group was receiving sterile saline solution hypodermically. This group, it was decided, could justifiably serve as a control for the orally administered vaccine. During the second year of the use of this vaccine a special group to serve as a control was set up. The subjects in this group were given lactose-filled capsules which were indistinguishable from the capsules containing the vaccine. They were prescribed with exactly the same instructions as the capsules containing the vaccine.

TABLE 6.—Results with *Streptococcus Vaccine Administered Orally*

	1937-1938	
	Vaccinated Group	Control Group
Subjects who completed study.....	154	203
Percentage.....	77	81
Number of colds per person during previous year*		
(a) Average.....	4.8	5.6
(b) Median.....	4.7	5.2
Number of colds per person during year of study		
(a) Average.....	1.5	1.6
(b) Median.....	1.9	1.6
Difference between experimental and control groups		
(a) Average.....	−0.1	
(b) Median.....	−0.3	
Number of days per person lost from school		
(a) Average.....	0.9	0.4
(b) Median.....	0.7	0.6
Subjects who had no colds during year of study, percentage.....	14	14

\* Reported from memory.

The directions for taking this vaccine were as follows: "The capsules must be taken on a resting and empty stomach. Take one capsule with a drink of cold water one hour before breakfast. One capsule must be taken each morning for seven consecutive mornings and then two capsules weekly throughout the season."

Each student was given a supply of capsules sufficient to last eight weeks, at the end of which time he returned to the health service for a new supply. This enabled the physicians in charge of the study to check on the actual use of the capsules by the students.

**Results.**—The method of reporting results was the same as that which has been described for the vaccine given subcutaneously. The tabulation of the reports (table 5) shows a reduction for the vaccinated group of approximately 70 per cent in the average number of colds per person for the year of the study as compared to the previous year. This is approximately the same reduction that was reported by Rockwell and

his associates. However, when we turn to our control group we find just as much reduction as was reported by the vaccinated group. In other words, this study shows that in the average or the median number of colds per person yearly, in the number of days lost from school and in the proportion of students who had no colds during the period of the study, there is no evidence of any benefit whatever from the vaccine.

TABLE 7.—Symptoms Attributed to Vaccine\*

	Polyvalent Oral Vaccine	Control Group	Streptococcus Vaccine
Gastrointestinal upset.....	4	1	1
Diarrhea.....	1	..	1
Abdominal pain.....	1	..	..
Nausea.....	..	..	1
Tired feeling.....	1	..	..
Headache and groggy feeling.....	1	..	..
Pain in chest.....	..	..	1
Irritation in nose.....	..	1	..
Nasal discharge.....	..	..	1
Sneezing.....	1	..	2
Sneezing and headache.....	1	..	..
Dry feeling in mouth.....	1	..	..

\* 1938 only.

**Streptococcus Vaccine.**—Dr. E. C. Rosenow,<sup>4</sup> who has been experimenting with several types of vaccines, supplied us with a streptococcus cold vaccine which he had prepared for use by mouth. The streptococci in this vaccine were isolated from the nasopharynx or sputum of patients with common colds. The final concentration of the vaccine contained 20 billion organisms per cubic centimeter. It is put up in a corn syrup vehicle. The first dose was 5 drops daily, taken preferably from a half to one hour before breakfast. This dose was increased by 5 drops daily up to 20 drops; then 20 drops was taken once or twice weekly throughout the winter.

During the year in which this vaccine was studied a control group was taking lactose-filled capsules. This group, it seemed, could serve satisfactorily as a control for both orally administered vaccines and was so used.

TABLE 8.—Complications

	Other Complications, Such as				
	Influenza	Pharyngitis	Pneumonia	Otitis Media	Patients Hospitalized
Subcutaneously administered vaccine.....	3	5	0	4	12
Control group.....	3	5	0	3	11
Polyvalent oral vaccine.....	2	8	1	19	30
Control group.....	5	13	0	16	34
Streptococcus vaccine*.....	1	14	0	17	32

\* Approximately half as many subjects as in the other groups.

The results reported with this streptococcus vaccine (table 6) parallel exactly the results reported by the control group.

**Untoward Symptoms.**—Table 7 shows a summary of the symptoms which the students attributed to the orally administered vaccines during 1937-1938. It will be noted that although relatively few students reported any such symptoms there is a distinct differentiation between the groups in this regard.

3. The firm which developed this vaccine was interested in its further evaluation and supplied us with the vaccine used in this study.

4. Rosenow, E. C., and Heilman, F. R.: Streptococcal Vaccines in the Prevention and Treatment of Respiratory Infections, *Am. J. Clin. Path.* 8:17 (Jan.) 1938.

## COMPLICATIONS

It has been stated frequently that, even though bacterial vaccines may have little or no value for the prevention of colds, they probably reduce the frequency and the seriousness of complications. Table 8 presents a summary of what might be considered complications from acute colds as these were recorded on the health service records of the several groups of students. Since some of the subjects lived at home, this report is not complete. On the other hand, it would seem that by groups the data should be relatively comparable. The larger number of complications reported by both groups which received "oral vaccine" and by the control groups during the last year of the study indicates that the acute infections of the upper part of the respiratory tract were more severe and of a different type during the last year than during the earlier years of the study. The number of cases involved in the several groups is too small to justify the drawing of conclusions, but certainly this table presents no evidence that the vaccines reduced the complications among these particular students.

CONDITION OF NOSE AND THROAT AND  
FREQUENCY OF COLDS

Every student included in this study had had a nose and throat examination by an otolaryngologist of the

TABLE 9.—Condition of Nose and Throat and Frequency of Colds

	Average Number of Colds Yearly in Several Groups During Period of Study		
	Normal Nose and Throat	Nasal Obstruction	Hypertrophied or Infected Tonsils
Subcutaneously administered vaccine.....	1.5	1.8	1.5
Control group.....	1.9	1.9	2.2
Polyvalent oral vaccine.....	1.9	1.5	1.7
Control group.....	1.7	1.7	1.7
Streptococcus vaccine.....	1.6	1.6	1.5

health service staff, in most instances within two months of the beginning of the study. Table 9, which presents a summary of the reports in accordance with the recorded condition of the nose and throat, gives no support to the impression that students with nasal obstruction or infected tonsils are unusually susceptible to colds.

## COMMENT

These studies were so planned that the reports of results would be made without prejudice on the part of either the patient or the physician. Tabulations were made for each year separately without the persons who made the tabulations having the summaries of the previous years at hand. The students were not under such constant supervision or subject to such accurate checks of absences due to illness as are certain groups of industrial employees. On the other hand, these students made intelligent, cooperative and conscientious subjects. Hence it would seem that the results here presented are sufficiently dependable and sufficiently well controlled to serve as a basis for conclusions.

Statistical analysis of the results reported for the subcutaneously administered vaccine shows that the differences reported are statistically significant and indicates that this vaccine has a definite biologic effect. However, in a group such as this, selected on the basis only of susceptibility to colds, the beneficial effect is too small to be of practical value. On the other hand,

further studies to determine how, why and for what persons the vaccine is of value are clearly indicated. If such studies should make it possible to select for vaccination the persons most likely to be benefited, it is possible that the average effectiveness of the vaccine could be greatly improved.

During the winter of 1936-1937 Drs. T. B. Magath and Joseph Berkson<sup>5</sup> of the Mayo Clinic conducted a study of oral vaccination<sup>6</sup> very similar to the one here reported. The subjects of their study consisted of doctors, nurses, stenographers, clerks, technicians and other employees of the Mayo Clinic. The experimental and the control groups were carefully equated and treated in a like manner. As in our study, the control group received lactose-filled capsules which they thought contained vaccine. All subjects kept accurate records of their colds, on which they reported each month.

A tabulation of these results shows an average of approximately 18 per cent less colds per person in the vaccinated group than in the control group. Just why Magath and Berkson obtained this evidence of slight benefit from the orally administered vaccine when our study shows none, it is difficult to say. The benefit may have been due, at least in part, to the differences in the ages and in the average susceptibility to colds of the subjects or to differences in the methods of collecting reports. For practical purposes, however, the results which they obtained and those which we are reporting are not at variance. In fact, the results with the orally administered vaccine are almost identical with those which we obtained with the subcutaneously administered vaccine. With this the average number of colds per person was 25 per cent less for the vaccinated group than for the control group, but who would advocate either the expense or the inconvenience of taking cold vaccines throughout the fall, winter and spring in order to reduce by 25 per cent the probable number of colds that one might have during the year?

## SUMMARY AND CONCLUSIONS

In a carefully controlled study of the value of three different vaccines which are recommended for the prevention of colds the subjects were cold-susceptible students of the University of Minnesota.

A "control group" was observed during each year of the study. Such groups were chosen at random from the students who applied for cold prevention treatment; the members were treated in exactly the same manner as those of the vaccinated group, and they believed throughout the period of the experiment that they were receiving vaccine. Sterile physiologic solution of sodium chloride was administered hypodermically as a control for the subcutaneously administered vaccine and lactose filled capsules as a control for the vaccines administered orally.

One of the most significant aspects of this study is the great reduction in the number of colds which the members of the control groups reported during the experimental period as compared to the number that the same students reported for the previous year. In fact, these results were as good as many of those reported in uncontrolled studies which recommend the use of cold vaccines.

The group which received vaccine subcutaneously experienced an average of 25 per cent less colds per

5. Personal communication to the authors.

6. The vaccine which they studied was the same polyvalent oral vaccine that was used in this study.

person than did the control group. This difference occurred during both years of the study and is statistically significant. Practically, however, it is of little or no importance, because a reduction of 25 per cent in the average number of colds in a group of individuals is not sufficiently great to justify the time and expense involved in carrying out the intensive vaccination procedure which was utilized.

The group which received the polyvalent vaccine administered orally experienced just as many colds as the control group during both years of the study.

The results reported by the students who took Rosenow's streptococcus vaccine parallel exactly those reported for the control group.

Although the data are not entirely conclusive, there is no evidence in this study either that vaccines reduce the complications of colds or that the condition of the nose and throat is related to the frequency of colds in a cold-susceptible group.

#### ABSTRACT OF DISCUSSION

DR. W. A. SAWYER, Rochester, N. Y.: The investigation of the authors is proof of how easy it is to jump to conclusions and make deductions on too little evidence. I have been guilty of concluding that because a patient reported no colds after taking a vaccine it was probably the result of the vaccine. Again and again one hears doctors say that they believe vaccines against colds are about 50 to 70 per cent effective. Such statements are based on evidence of very few cases, and almost always without a control study. Dr. Diehl and his co-workers have exercised much care in eliminating any personal psychology. What the individual feels or imagines has had too great an influence. In 1930-1931 in Rochester subcutaneous cold vaccines were given to a small group, with the result that 42 per cent reported no colds or mild colds. In all the work I have advised vaccines only to those who are highly susceptible. This 42 per cent looked encouraging. In 1931-1932, 45 per cent reported no colds or mild colds, again a figure giving some hope. In 1932-1933 the same percentage was obtained, 45. In 1933-1934 it was only 40 per cent. From such figures I think any one might assume that vaccines have been of some real value, particularly when given to persons who have previously had numerous colds. At least the percentages are rather consistent in these four different groups. Likewise, the percentages of those not helped were consistent, being 13, 15, 18 and 16. In 1934-1935 vaccines were given to 115 cold-susceptible employees, with the result that 57.4 per cent reported no colds or mild colds. This looked even more encouraging; however, this time there was a control group, but not to the extent that Dr. Diehl and his co-workers had. This control group did not receive anything to prevent colds, not even a placebo. Records were carefully kept of their colds and 46.8 per cent of them reported no colds or mild colds. This gives a slight margin of value to the vaccine, but not sufficient to warrant its general use. You see how different the picture looks with a control. This control group rated higher than any of the groups in any of the previous years. All of this looks rather encouraging, if one does not question what might have happened if they had not taken anything. We owe a debt of gratitude to Dr. Diehl and his co-workers for their valuable investigation.

DR. L. D. BRISTOL, New York: Throughout industry we have been attempting to appraise the value of these cold vaccines for some time, but, as Dr. Sawyer has indicated, it is often difficult to set up a controlled experiment of this sort in industry. Last fall I reported 20,000 instances of vaccinations against the common cold among six of our operating companies in the Bell system, covering an experience of from five to seventeen years. This was not a controlled experiment in any sense of the word but simply a study of what appeared to be the results; from that study we arrived at practically the same conclusions as Dr. Diehl and his co-authors have presented here; in other words, no apparent reduction in the

incidence of colds. The only way in which my study differed, slightly, from the authors' results was in finding some evidence of a reduced length of disability from work and some less severity and complications of colds among those who had received these vaccines. Such groups as the authors' in our universities are the ones to give the results of such scientifically controlled experiments. Their study goes a long way toward determining the real value of these cold vaccines.

DR. J. E. NELSON, Seattle: How do you account for the lower number of colds in the vaccinated and the controlled groups during the study than what they reported in the previous years?

DR. ROBERT K. CUTTER, Berkeley, Calif.: All reputable biologic laboratories welcome controlled studies of their products. Clinicians are often optimists and to control their overenthusiasm we urge the use of a placebo and the product to be tested, labeled only by numbers, the "key" held by a notary until the study is complete. It is unfortunate that Dr. Diehl and his co-workers used the Krueger antigen rather than the standard bacterial vaccines used in most other studies of cold vaccines, particularly as Dr. Singer-Brook reported at the American Academy of Pediatrics last week that in a study of whooping cough immunizing products the Krueger antigen group showed no greater immunity than the control group, while the group immunized with phase one vaccine, which is a true bacterial vaccine, showed definite immunity. This certainly does not prove that bacterial vaccine injections would prevent colds but it does indicate that a study involving Krueger's antigen does not evaluate the usual bacterial vaccines. I hope that Dr. Diehl and his co-workers will have an opportunity to study the worth of unmodified bacterial vaccines by injection in the future.

DR. H. S. DIEHL, Minneapolis: The results, I admit, were distinctly disappointing. We had hoped to find among these vaccines a specific preventive measure to reduce the incidence of colds. Dr. Sawyer's experience in connection with employees of the Eastman Kodak Company is enlightening and critical and, as he points out, shows again the necessity of having a control group before one is justified in drawing conclusions in a study of this sort. Individual opinions, as these studies show, mean nothing. During the course of this study several physicians have written or called us to say "I have a patient who was a student at the university last year and took your cold vaccine and got such splendid results that he wants to continue it. Will you be good enough to tell me what vaccine you are using?" And we would look it up and find in many instances that the person in question got the sterile saline solution or the lactose capsules. In answer to the question as to how we explain the smaller number of colds during the year of the study than during the previous year, this, I think, is merely evidence that none of our memories are accurate as to the number of colds we had a year ago. Furthermore, during the year of the study we gave each student a definition as to what to consider a cold. These were that "You are to record the condition as a cold only if the symptoms last twenty-four hours or longer. If you have a little coryza for half a day and it is gone, do not consider that a cold. These probably are the reasons for the fewer colds during each experimental period than during that previous year. These differences appear for the control groups as well as for the vaccinated groups. As to the use of heat-killed vaccine, we have no evidence that the heat-killed vaccine might not be better than the Krueger type vaccine, prepared without the use of heat. On the other hand, we assumed that if we were to use the heat-killed vaccine there might be some suggestion that the so-called undenatured antigen would be better, while if we used this mechanically killed and undenatured antigen the results would be applicable to the heat-killed vaccine as well. If this study did not accomplish anything else, it demonstrated the importance of treating "control" groups in exactly the same manner as experimental groups. In such preventive or therapeutic studies it is not sufficient to use for control purposes groups which are merely observed. They must be treated in exactly the same manner as the experimental group if the results are to have significance.

HYPERTENSION AND HEALTH  
DIAGNOSIS

A STUDY OF ONE HUNDRED CASES

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The following study of hypertension was made from the point of view of health diagnosis, namely, determination of the causes of impaired health that may or may not be the causes of disease.

The data for individual health diagnosis were obtained from five sources, as follows:

(a) A health history, to ascertain causes of impaired growth and development and of nervous instability.

(b) A physical fitness examination, to determine the present state of health and the physical defects.

(c) A check-up of the twenty faulty health habits which were found by clinical work with so-called healthy adults to be the most serious causes of impaired health.

(d) A check-up of daily programs of living from the time of rising until bedtime at night.

(e) A check-up of food habits, including the total daily intake of calories, the amount taken at each meal, the balance and the vitamin content.

The physical fitness examination includes the usual medical examination to exclude disease in order to evaluate the effects of faulty health habits. The physical check-up was uniform for every man examined and covered approximately 100 points of significance in determining causes of impaired health. Forty of these points were checked in the health history and thirty in the physical examination, and thirty were concerned with faulty health habits.

In judging physical fitness we have found weight for height<sup>1</sup> a valuable measure of optimum health, as is shown by chart 1. It will be seen that for the earlier ages mortality increases for persons below optimum weight, while for the later periods of life it increases for those above optimum weight. That range of weight is considered optimum for which there is the lowest mortality, from 5 to 15 per cent above the average weight for height.

Chart 1 shows the danger of overweight at the older ages, mortality increasing approximately 1 per cent for each pound above optimum weight. It is important to remember that the average weight of the actuarial table is not normal weight. At our first physical examination we explained the relation of weight to height and the desirability that persons in the danger zones of overweight and underweight obtain optimum weight as a standard of physical fitness.

Our physical fitness service was offered to the executives and employees of the Aetna Life Insurance Company at their home office. The definite results obtained by the correction of both the physical defects and the faulty health habits of the first 642 men taking the service were evidenced by a prompt improvement in their general condition: 199 overweight men reduced their weight 1,079 pounds (488 Kg.), and 259 underweight men gained 802 pounds (364 Kg.). Also there

was a reduction of 51 per cent in days off from sickness. Because of these results the service was later offered the larger policyholders of the company.

In the course of this work 120 men were found to have a systolic blood pressure of 143 mm. or over. Twenty did not return for a second reading.

This study has to do with 100 men with hypertension who followed our program: seventy-seven of the first 815 executives and employees examined and twenty-three of the first 205 policyholders examined. The men in the first group made an average of twenty visits to the department during a period of from one month to five years, and those in the second group made an average of ten visits in a period of from two months to two years. The first readings were taken at the first examination and the last readings at the latest visit.

Because of the relation of weight to mortality, which is recognized in insurance work by rejection or sub-

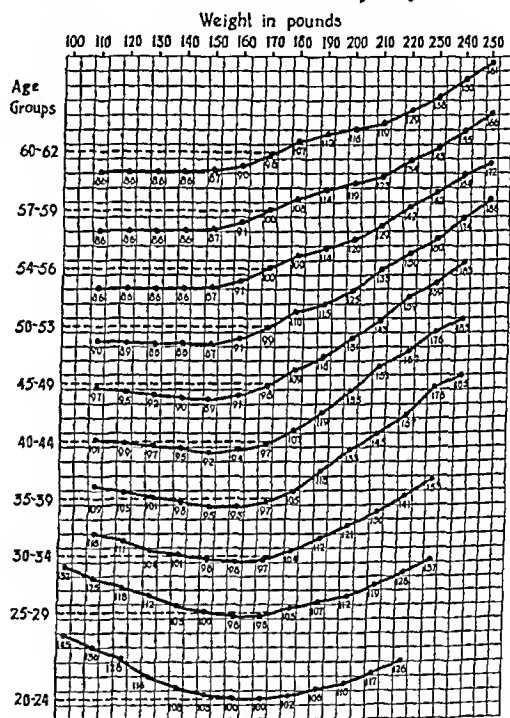


Chart 1.—Influence of weight on mortality. The figures on the curves represent the percentage of mortality for the respective ages and weights. In the early twenties mortality increases about 1 per cent for each pound below average weight for height. Above the age of 35 mortality increases about 1 per cent for each pound above optimum weight.

standard ratings on this factor alone, we have separated these groups into three divisions: overweight, optimum weight and underweight, as shown in table 1.

The health of these groups, according to their own ratings, is shown in table 2. Apparently 90 per cent of the men with hypertension considered their health above the average and 58 per cent considered their health optimum. Only 3 per cent considered their health below average, and none considered it poor.

Table 3 shows an average of less than one physical defect per subject. Excluding cerumen, carious teeth, hernia, flatfoot, varicocele, varicose veins, and cyst, which evidently are not factors in causing high blood pressure, we have a total of forty-seven defects which may be contributory causes, an average of 0.5 defect per subject. Thirty-four of the men were referred to their own physician and fifty-seven to their own dentist.

1. Emerson, W. R. P.: *The Diagnosis of Health*, New York, D. Appleton & Co., 1929.

The number of faulty health habits according to weight groups is shown in table 5. The optimum weight group had the fewest and the overweight group the greatest number of faulty health habits. The most common faulty health habits in the overweight group included overeating, fast eating and the taking of insufficient exercise, while the underweight group exceeded in habits of overactivity and fatigue. Overeating was common, as indicated by the large proportion of overweight men.

The ratio of physical defects to the number of faulty health habits was 1 to 4. Exclusive of physical defects not factors in hypertension, the ratio was 1 to 6. Since a faulty health habit may be as serious in causing impaired health as a physical defect, this ratio is significant.

Data additional to those obtained by checking the physical defects and faulty health habits were found by checking the daily programs of activity for each person from the time of rising until bedtime at night. The daily programs of both executives and employees revealed almost without exception the stress of arti-

TABLE 1.—Classification According to Weight

Group 1 (77 Men)			Group 2 (23 Men)		
Executives and Employees	Number	Percentage	Policy Holders	Number	Percentage
Overweight.....	40	52	Overweight.....	22	96
Optimum weight....	27	35	Optimum weight....	1	4
Underweight.....	10	13	Underweight.....	0	0
	77	100		23	100
Average age, 45 Range, 21 to 71			Average age, 53 Range, 32 to 78		

cial living. The usual program was a continuous performance mentally, physically or both, throughout the day, with meals in the same tempo as work or play, and ending with overeating at the evening meal. This program caused overfatigue and also gave rise to the habits of fast eating and eating when overtired. In the winter months undue indoor living was almost universal. With closed cars and increased indoor diversions, in many cases not more than ten or fifteen minutes a day was spent outdoors. Relatively few men took regular exercise, and when taken it was usually indoors.

The value of these accurate check-ups became apparent at once to the person examined, revealing the lack of intelligence used in his living and the need of planning his day in such manner as to obtain the essentials of health.

The most serious faulty health habits as related to hypertension were habitual overfatigue (caused by continuous performance under pressure), excessive intake of calories and faulty food habits, indoor living and lack of regular exercise, and worry and stress. Several, and frequently all, of these factors appeared in each case on analysis of the daily program. A majority of the men examined were readily convinced of their importance and were interested in undertaking their correction.

At each visit the applicant was weighed and his two day diet list checked, and every other week his blood pressure was taken. Suggestions were made for the correction of his daily program of living and his faulty health habits. Return visits were especially necessary for the overweight men, who required reeducation in food habits in order to accomplish a gradual loss in weight and at the same time to preserve a sense of well-being and comfort.

The prompt reduction in blood pressure that resulted from the correction of faulty health habits and the improvement in general health and efficiency were adequate incentive for following the program for physical fitness.

The number of visits made to the department was 1,687, an average of seventeen return visits.

TABLE 2.—General Health Rating

Group 1 (77 Men)			Group 2 (23 Men)		
Executives and Employees	Number	Percentage	Policy Holders	Number	Percentage
Excellent.....	48	62	Excellent.....	10	43
Fair plus.....	23	30	Fair plus.....	9	40
Fair.....	4	5	Fair.....	3	13
Fair minus.....	2	3	Fair minus.....	1	4
Poor.....	0	0	Poor.....	0	0
	77	100		23	100

### RESULTS

GROUP 1.—This group consisted of the seventy-seven executives and employees.

Cases of Overweight: There were forty men with hypertension in the high mortality zone of overweight. The range of their weight was from 21 to 92 pounds (9 to 42 Kg.) above the optimum weight for height and from 37 to 111 pounds (17 to 50 Kg.) above the average weight for height.

Twenty-eight of these men followed our program and reduced their weights 252 pounds (107 Kg.), with an average loss of 9 pounds (4 Kg.). They reduced their blood pressure 548 mm., with an average reduction of 19 mm. The range of time was from one month to five years, and the average period, twenty-seven months. The average number of visits was thirty.

TABLE 3.—Physical Defects

Group 1 (77 Men)	Number	Group 2 (23 Men)	Number
Cerumen.....	15	Cerumen.....	7
Dead teeth.....	13	Dead teeth.....	4
Carious teeth.....	11	Malocclusion.....	4
Malocclusion.....	0	Hernia.....	3
Flat foot.....	5	Varicocele.....	2
Eczema.....	3	Coronary disease.....	1
Hernia.....	3	Glycosuria.....	1
Deviated septum.....	2	Sebaceous cyst.....	1
Sinus.....	2	Abscessed teeth.....	1
Cardiorenal disease.....	1		
Nephritis.....	1	Total.....	24
Nasopharyngeal obstruction	1	Average.....	1
Pyorrhea.....	1		
Deafness.....	1		
Ichthyosis.....	1		
Varicocele.....	1		
Varicose veins.....	1		
Enlarged prostate.....	1		
Sebaceous cyst.....	1		
Total.....	73		
Average.....	0.97		

Twelve men showed an increase in blood pressure. Two had chronic nephritis, with a blood pressure of 194/110 and 235/115, respectively. Five did not control their diet. They increased in weight an average of 6 pounds (3 Kg.), with an average increase in blood pressure of 5 mm. Five relapsed after reducing their weight an average of 15 pounds (7 Kg.) and their blood pressure an average of 22 mm. in periods ranging from three months to three years. At the last reading these men were overweight an average of 43 pounds (19 Kg.).

Cases of Optimum Weight: There were twenty-seven cases of optimum weight. The blood pressures ranged from 144 to 195 mm. The results obtained with the men who followed the program regularly and those who



did not were as follows: Twenty men weighed in regularly, the average number of visits being ten and the average reduction in blood pressure 14 mm. Seven men weighed in irregularly, the average number of visits being four and the average reduction in blood pressure 1 mm.

Cases of Underweight: There were ten cases of underweight. The blood pressures ranged from 143 to 165 mm. In this group seven men came in regularly,

TABLE 4.—Faulty Health Habits

	Group 1 (77 Men)		Group 2 (23 Men)	
	Num- ber	Per- centage	Num- ber	Per- centage
No regular rest periods.....	71	92	22	96
Habitual overeating or undereating.....	43	56	10	43
Insufficient exercise or outdoor living.....	35	45	7	30
Fast eating or washing food down.....	26	34	13	57
Irregular bedtime.....	23	30	4	17
Irregular time of bowel movement.....	17	22	1	4
Worry and fretfulness.....	16	20	2	9
Candy or sweets between meals.....	16	20	3	13
Excessive use of tea, coffee, tobacco or alco- hol.....	11	14	1	4
Eating when overtired.....	10	13	2	9
Inadequate vacations or weekly rests.....	10	13	1	4
Habits injurious to health.....	9	12	2	9
Working in poor air above 65 F.....	7	9	0	0
Removable physical defects uncorrected.....	6	8	3	13
Irregular habits of living.....	6	8	3	13
Flakey about food.....	5	7	1	4
Overdoing at work or play.....	4	5	2	9
Irregular meal times.....	4	5	3	13
Sleeping with windows closed.....	2	3	0	0
Uncontrolled likes and dislikes.....	1	1	2	9
	322		82	
Total number faulty health habits.....	401			
Average.....	4			

and they made an average of eight visits for periods varying from one to four years. The final check-up showed an average increase in weight of 1 pound (0.5 Kg.) and an average decrease in blood pressure of 10 mm. In five cases the pressure reached a normal level, and in another, 144 mm.

Of the remaining three men, two returned once only, their blood pressure showing an average increase of 3 mm. The third, a man of marked nervous instability, made forty visits to the department in two and one-half years. During this time his systolic pressure ranged from 215 to 165 and his diastolic pressure from 115 to 90 mm. Further medical study by his own physician was indicated, but he was not interested in having this done.

GROUP 2.—This group consisted of the twenty-three policyholders.

Cases of Overweight: Twenty-two overweight men followed the program, making an average of ten visits. They reduced their weight 152 pounds (69 Kg.), or an average of 7 pounds (3 Kg.), and their blood pressure 427 mm., or an average of 19 mm. The range of time covered was from one month to two years and the average period five months.

Cases of Optimum Weight: There was but one case of optimum weight. The blood pressure was reduced 36 mm.

Cases of Underweight: There were no cases of underweight in this group.

Summary of Results in the Two Groups.—Seventy-eight men returned regularly. The average of the initial readings of their systolic blood pressure was 160 mm. After periods of from one month to five years the average was 142 mm., a reduction of 18 mm.

The results obtained by these seventy-eight men, according to weight groups, were as follows: Fifty

overweight men were an average of 44 pounds (20 Kg.) above the averages of the table. They reduced their weight an average of 8 pounds (4 Kg.) and their blood pressure an average of 20 mm. At the final check-up they still had an average weight of 36 pounds (16 Kg.) above that of the table. Their blood pressure was an average of 2 mm. below 143. Twenty-eight men not overweight reduced their blood pressure an average of 14 mm. The average final reading was 144 mm.

Twenty-two men increased their blood pressure an average of 3 mm. The average initial reading was 162 mm. The final readings, taken after periods varying from one month to five years, showed an average of 165 mm.

The causes of failure to improve were as follows:  
Two men had chronic nephritis.  
One man had abnormal nervous instability.

Five men relapsed after reducing their weight an average of 15 pounds (7 Kg.) and their blood pressure an average of 22 mm.

Five men (overweight) did not control their diet, increasing their weight an average of 6 pounds and their blood pressure an average of 5 mm.

Nine men did not return regularly because they were under the care of their own physicians or for other reasons. Their blood pressure remained the same, an average of 10 mm. above normal.

Fifty-four men reduced their blood pressure to a normal range of from 143 to 118 mm., as follows: Thirty-four reduced to an average of from 143 to 133 mm.; sixteen reduced to an average of from 133 to 123 mm., and four reduced to an average of from 123 to 118 mm.

The correlation of weight to reduction in blood pressure is shown by the following typical case:

A man aged 62, who was a "high pressure" manufacturer, complained of getting out of breath on moderate exercise, of "pounding" of his heart and of tiring easily. The physical defects were hernia (for which he wore a truss) and mal-

TABLE 5.—Faulty Health Habits and Weight

No. of Cases	Faulty Health Habits	Average
62	Overweight.....	277 4.5
28	Optimum weight.....	88 5.2
10	Underweight.....	39 5.9

TABLE 6.—Relation of Blood Pressure to Weight for  
Twenty-Seven Men

	Second Week	Fourth Week	Sixth Week	Eighth Week
Average weight, pounds.....	190	185	182	176
Average blood pressure, mm.....	168	144	145	141

occlusion. His faulty health habits were continuous performance under pressure, overeating, fast eating and the candy habit. He reorganized his daily program and corrected his faulty health habits. At the end of the first three months, after he had reduced his weight 10 pounds (4 Kg.), his blood pressure returned to normal (130 mm.). He remarked, "I never realized I could feel so well as now." His final reduction was 25 pounds (11 Kg.) in weight and 28 mm. in blood pressure.

This case shows an early reduction in blood pressure out of proportion to the reduction in weight, which indicates that the subject's hypertension was due more to the excessive number of calories taken than to overweight (chart 2). A similar relation of reduction in

blood pressure to reduction in weight for twenty-seven men who weighed in every two weeks is shown in table 6.

At the end of six weeks the total reduction in blood pressure was 27 mm., with a reduction of 14 pounds (6 Kg.) in weight. It will be seen that there was a drop of 24 mm. at the end of the second week. Evidently this was due more to the correction of faulty health habits than to loss in weight.

In many cases we found that with the reduction of calories to the needs of the patient there was a reduction in blood pressure and a marked improvement in appearance and well-being although the weight remained constant. In other words, the by-products of incomplete combustion were apparently more potent in causing hypertension than weight itself.

The small number of physical defects is accounted for by the fact that practically all these men had been examined by their own physicians and many of them by specialists.

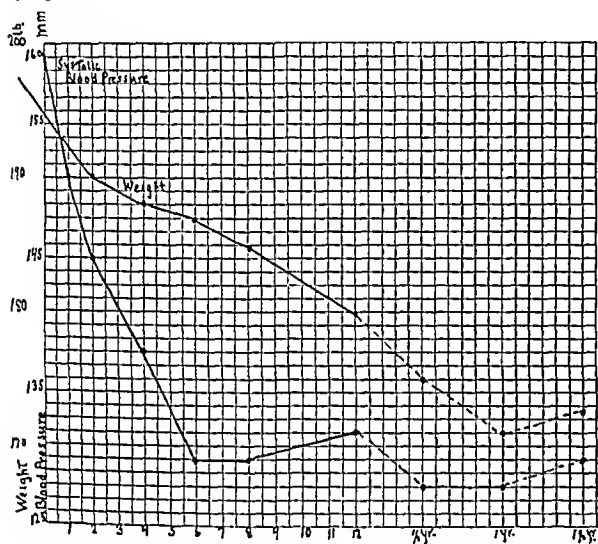


Chart 2.—Correlation of weight to reduction in blood pressure as shown by a typical case.

Except in the two cases of nephritis, physical defects were not definite causes of hypertension. Abscessed and dead teeth were removed, but reduction in blood pressure occurred before their removal. The glycosuria, enlarged prostate and sinai infection, which appeared each in one case, were mild and not definite factors. On the other hand, not one of the men was free from serious faulty health habits.

#### COMMENT

The physical fitness service is essentially a health service. It is based on the diagnosis and correction of causes of impaired health other than disease. The object of the physical examination is to exclude disease and to determine the state of the person examined. In every instance in which disease was found the applicant was referred to his own physician or dentist. No prescription was given or drug used. When hypertension was found it was considered a symptom of impaired health. After the correction of the causes of impaired health, we obtained the results recorded in this paper.

In a sense, all health work is medical work and therefore should be carried on by the physician. However, the details of health work are so many that a

well trained physical fitness worker is as necessary in this field as the nurse in the field of medical and surgical practice. Our physical fitness program at the home office of the Aetna Life Insurance Company is carried on by one full time physical fitness worker and one physician, who is present only two days every other week. Between 5,000 and 6,000 visits have been made to the department yearly.

We find in the literature that it is still debated whether hypertension is a disease or a symptom and that essential hypertension is considered a disease entity.

In this series of 100 cases we found only one case of questionable essential or hereditary hypertension. The patient was unwilling to have a complete medical examination made.

The majority of the men had been under the care of one and often of several physicians. The advice given ranged from reassurance that hypertension was a normal process occurring after middle life and hence not a cause for worry to the advocacy of an alarmist regimen calling for the avoidance of all excitement and the discontinuance of many, if not all, exercises and activities.

Return visits were necessary because the treatment consisted essentially of reeducation in habits of living and because the results shown by the weekly weighings and the biweekly blood pressure readings served as convincing evidence of the importance of keeping to the program.

We found the majority of the men interested in following directions when the causes of their hypertension were found and definite directions given for their correction. In fact, the number of return visits made by busy executives from distant parts of the state did not differ from the number made by executives and employees in the same building.

#### SUMMARY

A physical fitness service based on health diagnosis was offered a group of executives, employees and policyholders of the Aetna Life Insurance Company.

Among the first 1,020 men applying for this service there were 120 with hypertension. Of these, 100 (84 per cent) made an average of sixteen return visits to the department in their efforts to attain a higher standard of health by seeking optimum weight, by correcting their physical defects and faulty health habits and by reorganizing their daily program of living.

The average age of these men was 47 (range, from twenty-one to seventy-eight). Ninety per cent had considered their health above average, and 58 per cent had considered it optimum. Only 3 per cent considered their health below average, and none felt that it was poor.

An average of one physical defect and four faulty health habits was found.

The results obtained were as follows: Seventy-eight men returned regularly and reduced their blood pressure an average of 18 mm. This level was found at final readings taken from two months to five years after the initial readings. Twenty-two men did not lower their blood pressure, because of organic disease or failure to correct their faulty health habits.

Overweight was a cause of hypertension in forty cases, but the by-products of incomplete metabolism, caused by habitual overeating, were apparently more potent causes of hypertension than weight itself.

The chief cause of hypertension in twenty-eight cases in which it was not overweight was faulty health habits; namely, habitual overfatigue, indoor living, lack of regular exercise and faulty food habits.

No case was found of "essential" hypertension. We believe this term is a misnomer applied in cases in which no accurate diagnosis is made.

Only one man with possible "hereditary" hypertension was found. He was unwilling to have a Wassermann or other laboratory tests made.

Regular return visits were essential, as treatment consisted of a reeducation in habits of living.

The definite measure of results attained by the correction of faulty health habits, as indicated by the regular weighing and the reading of the blood pressure, was an adequate incentive for return visits.

Our experience indicates that hypertension is a symptom and is not a disease; that this symptom is caused more often by faulty health habits than by physical defects; that patients with hypertension are interested in correcting both physical defects and faulty health habits and in rearranging their daily program of living when definite directions are given them; that health diagnosis as an essential part of adequate medical diagnosis is not sufficiently stressed in modern medical practice.

## Clinical Notes, Suggestions and New Instruments

### RUPTURE OF THE STOMACH IN THE NEWBORN

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Rupture of the stomach in the newborn is a pathologic curiosity. Dunham and Goldstein<sup>1</sup> reported two cases in 1934 and in a review of the literature could find only nine others. Later in the same year Smythe<sup>2</sup> added two more. The following is an additional report, bringing the total to fourteen:

#### REPORT OF CASE

F., a boy, was born at term, weighing 7 pounds (3,175 Gm.). It was the mother's second pregnancy. The maternal history was irrelevant. Labor was easy and delivery was spontaneous. The infant was in good condition at birth. There was no evidence of asphyxia or trauma of any kind. He lost 2 ounces (57 Gm.) in the first twenty-four hours but regained his birth weight on the third day. At 1 p.m. of this day he suddenly became cyanotic and his breathing was labored. The abdomen was somewhat distended. Rectal irrigation temporarily lessened this distention. Normal fecal matter was obtained. On physical examination at 4 o'clock he was in a stuporous state. The rectal temperature was 101 F. Breathing was rapid and shallow. There was some spasticity of all the extremities. The throat was examined with difficulty. The abdomen was markedly distended but soft and pliable. At 8 o'clock the temperature had risen to 104.2 F. Breath sounds were more rapid and shallow and the breathing was stertorous. The infant died at 10 p.m.

Autopsy was performed by Dr. Aaron S. Price thirty-six hours after death. The body was well developed and well nourished. There was no evidence of damage to the skull. There was marked abdominal distention.

An incision was made from the sternum to the symphysis, and as soon as the abdomen was opened a large amount of foul odored gas escaped, leaving the abdomen in a relaxed state. The incision was extended downward. A diffuse exudative peritonitis was found, with a large amount of fluid

and some plastic exudate. The intestine and omentum were extremely congested. There was a large perforation in the anterior portion of the stomach along the greater curvature near the cardiac end which measured seven-eighths by one-half inch (22 by 18 mm.). The stomach was filled with coagulated curdled milk, and through the opening the gastric contents were leaking out. Microscopic examination of the stomach showed an acute exudate over the peritoneal surface with numerous bacterial deposits and some bile pigment in the exudate. There was considerable autolysis of the mucosa with extreme congestion and dilatation of its blood vessels. There was no way of positively proving the etiology of the condition found but, from the appearance of the stomach, it was believed to be an acute ulcer with perforation.

The lungs were completely atelectatic, except along the anterior margins. Microscopic examination showed atelectasis and congestion with a slight degree of hemosiderosis.

Microscopically the liver showed rather marked congestion, a slight degree of simple degenerative changes, and slight hemosiderosis. Microscopic examination of the spleen also showed an extreme degree of congestion.

Examination of the skull and brain showed no evidence of fracture, tentorial laceration or intraventricular or intracerebral hemorrhage. The rest of the examination also was negative.

#### COMMENT

Rupture of the stomach is usually secondary to an ulcer. Various reasons have been offered to explain the etiology of acute gastric ulcer but it seems probable that the essential cause is some interference with the blood supply to the area affected. Lack of nutrition permits the action of the gastric juice to bring about necrosis and ulceration. Embolism, thrombosis, vascular disease, direct injury to the mucosa in gavage, congestion due to asphyxia at birth and septicemia have each in turn been held responsible for the production of this vascular injury. In addition, Weiss and Mallory<sup>3</sup> have called attention to vomiting as a cause of lacerations in the cardiac end of the stomach. It is also possible that when rupture has occurred it may be due to some congenital defect in the stomach wall. However, no such case has as yet been demonstrated.

Perforation of the intestine is more frequent than either perforation of the stomach or perforation of the duodenum, which conditions occur about equally.<sup>4</sup> However, with perforation of the intestine some congenital defect is usually found distal to the site of rupture. This may be either a defect in the lumen due to intrinsic causes or a stenosis produced by a peritoneal band. In a review of the cases of gastric rupture cited previously, such a lesion was present in only one case.<sup>5</sup> But this was a partial obstruction of the ileocecal valve and it is hardly likely that it bore any relation to the gastric lesion.

Perforation has occurred in all areas of the stomach—cardiac, middle, pyloric, anterior and posterior surfaces, greater and lesser curvatures. In some cases it has even occurred twice in the same patient. Diagnosis is difficult but it should be suspected in the presence of a distended abdomen with or without signs of toxemia. However, this distention is not always present. The abdomen, although swollen, may be soft and easily palpated, and the absence of rigidity, as in older patients, should not mislead the examiner. A history of hematemesis or the presence of blood in the stool is suggestive of an ulceration, but in several of the cases reported neither of these signs was present. X-ray examination by means of a flat plate may show the presence of free gas in the peritoneal cavity. Paracentesis of the abdomen should also be considered as a diagnostic aid. Treatment is surgical and the usual supportive measures administered postoperatively. The progress is not absolutely hopeless, as Davenport and Goldstein<sup>6</sup> have reported recovery from a peritonitis associated with intestinal bands in an infant weighing 5½ pounds (2,500 Gm.).

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3. Weiss, Soma, and Mallory, G. K.: Lesions of the Cardiac Orifice of the Stomach Produced by Vomiting, *J. A. M. A.* 98: 1353 (April 16) 1932.

4. Seinsheimer, Frank: Duodenal Ulcer with Rupture on Fourth Day of Life, *J. A. M. A.* 105: 875 (Sept. 14) 1935.

5. Davenport, G. L., and Goldberg, S. L.: Fetal Peritonitis in a Premature Infant, *Illinois M. J.* 66: 563 (Dec.) 1934.

From the New York Polyclinic Hospital and Medical School.  
1. Dunham, E. C., and Goldstein, R. M.: Rupture of the Stomach in Newborn Infants: Report of Two Cases, *J. Pediat.* 4: 44 (Jan.) 1934.  
2. Smythe, F. W.: Gastric Ulcers in the Premature Newborn, *Am. J. Surg.* 24: 818 (June) 1934.

## Special Article

### THE USE OF VITAMIN D PREPARATIONS IN THE PREVENTION AND TREATMENT OF DISEASE

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*This article and others recently published or to be published comprise a new series on the present status of our knowledge of the vitamins. They have been prepared under the general auspices of the Council on Pharmacy and Chemistry and the Council on Foods. The opinions expressed are those of the authors and not necessarily the opinions of either council. Reprints are not available but the articles will be published later in book form.—Ed.*

But for rickets vitamin D would not have been discovered. Its discovery was the secret to rickets; its use is essentially the therapy of that disease. The most direct way to furnish the foundation for intelligent use of vitamin D is to review briefly the sources and requirements of this factor from the point of view of practical therapeutics.

At the present time no less than ten forms of vitamin D are known,<sup>1</sup> but only two have practical importance. One is activated ergosterol of plant origin, in its pure form known as calciferol and given the name of viosterol by the Council on Pharmacy and Chemistry; the other is activated 7-dehydrocholesterol, of animal origin, the form of vitamin D discovered by Waddell<sup>2</sup> and the one which develops in the skin under the action of ultraviolet rays.<sup>3</sup> The short ultraviolet rays of the sun or those derived from artificial sources (such as the quartz mercury vapor lamp and the carbon arc lamp) convert the provitamin in the skin, 7-dehydrocholesterol, into the active form. This is absorbed by the blood. If the vitamin is fed, it is absorbed from the small intestine as a result of the action of bile. In the one case the vitamin formed on the surface of the body finds entrance into the interior through the skin; in the other, ingested ready made, it is absorbed through the intestine. The result is the same.

The accepted standard unit for expressing the strength of vitamin D, as adopted by the United States Pharmacopeia, is defined as the vitamin D activity of 1 mg. of the international standard solution of irradiated ergosterol, found equal to 0.025 microgram of crystalline vitamin D. This is the international unit accepted as the U. S. P. unit, except that the U. S. P. standard is a reference cod liver oil that has been assayed against the international standard. In stating doses of antirachitic agents, one should think in terms of international units (or U. S. P. units, which are identical<sup>4</sup>), for that is the only way in which the various substances containing vitamin D, which differ from one another so much in bulk, can be reduced to a common denomina-

tor. One quart of irradiated milk, for example, contains 135 U. S. P. units, whereas 1 mg. of calciferol contains 400,000.

It is necessary to understand that vitamin D is present in only a few foods ordinarily eaten by us; namely, in milk and some dairy products, in liver and the flesh of certain fish and in eggs. Campion, Henry, Kon and MacKintosh<sup>5</sup> have found that the milk obtained in June from cows kept outdoors contains from 17 to 26 units per quart, a very small amount, whereas the milk of cows kept indoors contains only from 5 to 8 units per quart, practically none. Bechtel and Hoppert<sup>6</sup> reported the content of summer milk as 40 units per quart and of winter milk as 5 units per quart. Apparently pasture feeding has no influence on the vitamin D content of milk, but pasture life in summer does because of exposure of the cow to the sun's rays. The point to realize is that unless special means are taken to enrich the milk with the vitamin, such as feeding irradiated yeast, irradiating the milk itself or adding the vitamin directly, milk is a feeble source of vitamin D. The vitamin in milk is in the butterfat. As expected from the foregoing account, this assays at low values. Average butter is estimated as containing only 80 units per hundred grams, having only about one-hundredth the potency of cod liver oil. Mammalian liver contains from 10 to 45 units per hundred grams, again a small quantity.<sup>7</sup> The content of liver is probably also extremely variable; it may be nil. Canned fish, sardines and salmon contain small amounts of vitamin D. The vitamin D of eggs is contained entirely in the yolk. Samples of yolks of February eggs have been reported to contain 140 units of vitamin D, and of June eggs 390 units per hundred grams.<sup>8</sup> Although eggs, like milk, can be improved from the standpoint of vitamin D content if special means to that end are taken, the important point is that as ordinarily marketed they contain too small and at the same time too uncertain an amount of vitamin D to be counted on as a dependable source.

The Eskimos must take extremely large, at times tremendous, quantities of vitamin D in their diet, since through the exigencies of nature they eat largely fish and the fatty flesh of fish-eating animals and birds. Seal flesh is high in vitamin D.<sup>9</sup> The Eskimos owe their protection from rickets and osteomalacia to their diet. Rickets makes its appearance among them as soon as our foods become substituted for theirs.<sup>10</sup> This fact in itself is a cogent indictment of our diets for deficiency in vitamin D. By selection of vitamin D-containing foods (the flesh of certain oily fish, eggs, butter, liver) we also could obtain a moderate supply of vitamin D from food alone, but the diets which we do choose (ordinary milk, fruit, sugar, cereal grains, tubers, green vegetables and muscle meat) must furnish at most a negligible amount of the vitamins.

5. Campion, J. E.; Henry, K. M.; Kon, S. K., and MacKintosh, James: The Source of Vitamin D in Summer Milk, *Biochem. J.* 31:81 (Jan.) 1937.

6. Bechtel, H. E., and Hoppert, C. A.: Study of Seasonal Variation of Vitamin D in Normal Cow's Milk, *J. Nutrition* 11: 537 (June) 1936.

7. de Vane, G. M., and Munsell, H. E.: Vitamin D Content of Calf, Beef, Lamb and Hog Liver, *J. Home Econ.* 27: 240, 1935.

8. de Vane, G. M.; Munsell, H. E., and Titus, H. W.: Effect of Sources of Vitamin D on Storage of the Antirachitic Factor in the Egg, *Poultry Sc.* 12: 215, 1933.

9. Rabinowitch, I. M.: Clinical and Other Observations on Canadian Eskimos in Eastern Arctic, *Canad. M. A. J.* 34: 487 (May) 1936.

10. Daniel, E. P., and Munsell, H. E.: Vitamin Content of Foods, Miscellaneous Publication 275, U. S. Department of Agriculture, June 1937. Schastin, N. R., and Petrujajeff, A. T.: Rachitis bei Kindern auf der Insel Kolgufew, *Jahrb. f. Kinderh.* 140: 314, 1933. Thomas, W. A.: Health of Carnivorous Race: Study of Eskimo, *J. A. M. A.* 88: 1559 (May 14) 1927.

From the Department of Pediatrics of the Johns Hopkins University School of Medicine and the Harriet Lane Home of the Johns Hopkins Hospital.

1. Bills, C. E.: The Chemistry of Vitamin D, *J. A. M. A.* 110: 2150 (June 25) 1938.

2. Waddell, James: The Provitamin D of Cholesterol: I. The Antirachitic Efficacy of Irradiated Cholesterol, *J. Biol. Chem.* 105: 711 (July) 1934.

3. Windaus, Adolf; Lettré, H., and Schenck, F.: Ueber das 7-Dehydrocholesterin, *Ann. d. Chem.* 520: 98, 1935.

4. In this article, wherever units of vitamin D are mentioned, the U. S. P. XI unit is meant.

The infant whose diet consists of milk, sugars, fruit juices and cereals during the early months, to be supplemented later with green vegetables, potato, muscle meat and egg, will lack a supply of vitamin D almost entirely unless it is furnished by the summer sun's rays or some specially provided alimentary source.

#### THE ARMAMENTARIUM FOR THE CORRECTION OF VITAMIN D DEFICIENCY

I shall not discuss the relationship of ultraviolet light to vitamin D activation or the treatment of vitamin D deficiency with ultraviolet light. These subjects are dealt with in a separate section by Ethel Luce-Clausen. Instead I shall list the preparations available for the prevention and treatment of vitamin D deficiency by way of the alimentary tract, at the same time giving information of a useful, practical nature about each.

**Cod Liver Oil.**—The U. S. Pharmacopeia XI requires that cod liver oil shall contain not less than 85 units per gram. As a matter of fact, probably most cod liver oil marketed in this country contains at least 100 units per gram and some of the superior brands two and even four times this official standard. One teaspoonful of cod liver oil, about 4 Gm., supplies about 340 units if the vitamin is U. S. P. minimum standard strength, or about 400 units if the oil is slightly more potent. The vitamin in cod liver oil is probably chiefly activated 7-dehydrocholesterol, the same as the one which is formed in the skin through irradiation.

Cod liver oil is the time-honored remedy for the cure of rickets. Its use goes back into the middle ages.<sup>11</sup> Its advantages are: It is extremely effective in the treatment of rickets (osteomalacia), as was pointed out so clearly years ago by Trousseau;<sup>12</sup> it is universally available; despite assertions to the contrary,<sup>13</sup> it is safe;<sup>14</sup> it contains vitamin A in abundance (about 1,000 units per gram), and its fat is a valuable addition to the diet of many infants. The disadvantages are its lack of concentration, which makes the dose requirement large, and its fishy taste.

It is not practical to attempt to give more than 4 teaspoonfuls, about 1,600 units, daily. Cod liver oil is therefore not potent enough—not enough can be given—to prevent or cure rickets in some premature babies and in especially susceptible full term infants and older children. It is not the best remedy to stop rickets quickly. If more units of vitamin D are required than can easily be given in cod liver oil, it is necessary to turn to the concentrated preparations of vitamin D.

The fishy taste of cod liver oil virtually precludes its use in the case of the older child and adult. Most infants, however, will take it well and may even develop a liking for it if its administration is begun early and it is given regularly. If it is not given until toward the end of the first year or if its use is allowed to lapse, difficulties in administration will arise. When an infant refuses cod liver oil the trouble usually lies with the mother, who transfers her feelings and prejudices. The ease and success with which cod liver

oil may be given to children over 2 years of age when the force of example is brought into play, as in nursery schools, bear witness to the influence of the attitude of adults. One of the obstacles to the use of cod liver oil in the lay mind is the deep-rooted belief that it causes digestive disturbances, especially in hot weather, and that some infants are constitutionally unable to take it at all. Cod liver oil rarely gives rise to digestive disturbances and can be administered in hot weather without any difficulty. However, it must be admitted that some infants cannot take it. In rare instances hypersensitiveness to it may exist.<sup>15</sup> If aspirated it may produce lipoid pneumonia. On account of this danger as well as on account of its low potency other more concentrated forms of vitamin D are to be preferred for premature infants.

Cod liver oil may be given directly from the spoon. It may, however, be floated on orange juice and the two fed together. As much as three teaspoonfuls can be given as a single dose. If the infant does not readily take it, it is wise to turn to some other preparation of vitamin D.

**Viosterol in Oil.**—Viosterol in oil is ergosterol activated by irradiation or by other methods and dissolved in corn oil or some other bland oil. The United States Pharmacopeia requires that 1 Gm. of viosterol in oil shall contain "at least 10,000 units." In order to prescribe viosterol in oil, it is necessary to know that the vitamin D content of 1 drop is 166 units. There are variations in the quantity of oil delivered by droppers because of variations in the droppers themselves. The manufacturer tries to compensate for these variations by using droppers which will deliver slightly more than the certified amount. Consequently the dose may slightly exceed the calculations. Viosterol in oil is prepared in such a way that it is a hundred times stronger in vitamin D content than standard cod liver oil. Its concentration is a great practical advantage but makes overdoses possible.

Viosterol in oil is tasteless; no difficulty is ever encountered in administering it. In experienced hands it is best dropped directly into the mouth. If difficulty is met, it can be dropped on orange juice in a teaspoon and floated into the mouth. It should never be added to the feeding, lest a part be lost by adhering to the sides of the bottle.

The disadvantage of viosterol, as compared with the fish liver oils, is that it does not supply vitamin A. Viosterol is well adapted for the use of older children and adults.

Before leaving the subject of viosterol it is well to point out that it is now manufactured in two different ways, one by means of ultraviolet irradiation, the other by bombardment with low velocity electrons. Viosterol made by the latter process seems to be the same chemically and biologically as the product of irradiation.<sup>16</sup>

**Viosterol (Calciferol) in Propylene Glycol.**—This preparation is alleged to be pure vitamin D, prepared from irradiated ergosterol, dissolved in propylene glycol. Its distinctiveness lies in the solvent employed. Because of the solubility of propylene glycol in water.

11. Guy, R. A.: *The History of Cod Liver Oil as a Remedy*, Am. J. Dis. Child, 26: 112 (Aug.) 1923.

12. Trousseau, Armand: *Clinical Medicine*, Philadelphia, Lindsay & Blackiston 2: 734, 1882.

13. Agduhr, Erid: *Untersuchungen über den Einfluss einiger natürlicher Fette und ihrer Komponenten auf tierische Gewebe; der Einfluss verschiedener Komponenten auf bestimmte Organe*, Ztschr. f. Vitaminforsch. 3: 1-10 (1937).

14. Cox, W. M., and Roos, A. J.: *On the Alleged Toxicity of Cod Liver Oil*, Bull. Johns Hopkins Hosp. 54: 430 (June) 1934.

15. Menagh, F. R.: *Etiology and Results of Treatment in Angio-neurotic Edema and Urticaria*, J. A. M. A. 90: 668 (March 3) 1928.

16. (a) McQuarrie, Irvine; Thomson, W. H.; Stoesser, A. V., and Rigler, L. G.: *The Antirachitic Potency of Ergosterol Activated by Low Velocity Electrons*, J. Pediat. 10: 295 (March) 1937. (b) Bills, C. E.; Massengale, O. N.; Imboden, Miriam, and Hall, Helen: *The Multiple Nature of the Vitamin D of Fish Oils*, J. Nutrition 13: 435 (April) 1937.



it can be mixed directly with milk. The customary procedure is to drop the dose into the milk. The disadvantage of this preparation is that it does not contain vitamin A. It is standardized so that its potency corresponds exactly with that of viosterol in oil.

*Fish Liver Oils Enriched with Viosterol or Some Natural Source of Vitamin D.*—To halibut liver oil, which is far richer than cod liver oil in vitamin A but only a few times more potent in D, viosterol or some fish liver oil highly concentrated in D is added in the amount necessary to raise the vitamin D concentration to equal that of viosterol in oil. The object is to obtain a preparation which is concentrated in A as well as D. If viosterol is used as the reinforcing agent, practically the entire D content of the product is viosterol. The vitamin A content of halibut liver oil varies but is standardized at about 50,000 units per gram. The administration should be like that of viosterol in oil.

*Fish Liver Oils Highly Concentrated in Vitamin D.*—Oils from the livers of different species of fish vary greatly in concentration of both vitamin D and vitamin A. Some are rich in A, some in D and some in both. The suborder of fish highest in vitamin D is the percomorphi.<sup>16b</sup> The blue fin tuna heads this group, with the enormous concentration of 40,000 units per gram. What the manufacturers have done in the preparation of these concentrated products is to combine oils from different species in such a way that the final admixture will have the same concentration as viosterol in oil; namely, 10,000 units of vitamin D per gram (1 drop contains 166 units). Percomorph oil is standardized at about 60,000 units of vitamin A per gram, a hundred times the concentration of standard cod liver oil. These fish liver oils have the merit, therefore, of providing D and A in high concentration so that the two can be administered together in doses measured in drops. Naturally the taste is fishy, but the quantity required is very small. Administration should be like that of viosterol in oil.

*Irradiated Cholesterol.*—This is obtained by the irradiation of cholesterol. The form of vitamin D is activated 7-dehydrocholesterol. Its efficiency in the treatment of rickets has been investigated by Tisdall, Drake and Brown,<sup>17</sup> Hood and Ravitch<sup>18</sup> and, more recently, by Drake, Tisdall and Brown<sup>19</sup> and found to be excellent.

*Miscellaneous Preparations Whose Vitamin D Is Derived from the Fish Liver Oils or Viosterol.*—Cod liver oil concentrate is marketed in liquid, capsule or tablet form. Concentrates from the fish liver oils are combined with carotene. Viosterol is furnished in combination with dicalcium phosphate and similar compounds. The dose varies with the preparation as indicated by the label.

*Vitamin D Milk.*—Milk is the staple ingredient of the diet of the infant and the chief source of calories. The great advantage of placing vitamin D in milk is that it is taken willy-nilly. The disadvantage is that the amount of milk supplying the desired number of calories may not at the same time supply the full vitamin D requirement, which seems to vary with age

(growth) rather than with weight.<sup>20</sup> There are three kinds of vitamin D milk.<sup>21</sup>

Irradiated vitamin D milk is produced through the exposure of milk in a thin film for a brief period to the active rays of ultraviolet light from artificial sources. The milk is standardized at 135 units per quart, although some products contain as much as 200 units per quart, as indicated on the label. The potency of ordinary irradiated milk, which is obviously low, cannot be increased greatly by irradiation without the production of an unpleasant taste. The form of vitamin D produced in milk by irradiation is probably activated 7-dehydrocholesterol, as already stated. Irradiated milk is marketed fresh and also in evaporated and dried form. The latter forms are standardized so as to contain 135 units to the reconstituted quart.

Metabolized vitamin D milk is produced by feeding irradiated yeast to the cow. It is standardized so as to contain not less than 400 units per quart. Its potency in rat units is thus approximately three times that of irradiated milk. The form of vitamin D is irradiated ergosterol, which apparently passes through the cow into the milk unchanged.<sup>22</sup>

Fortified vitamin D milk is produced through the direct addition of a vitamin D-containing concentrate derived from cod liver oil, other fish liver oils, viosterol or fish liver oil emulsions. It is standardized at 400 units per quart. The form of vitamin D in the milk varies naturally with the form in the supplement.

In the case of each of the three varieties the taste is not impaired by the enrichment process, so that the milk is a hidden source of vitamin D and the problem of administration, whether to old or young, is merely that of administration of the milk itself.

*Vitamin D Bread.*—Bread has been produced containing 460 units in the form of viosterol to the 24 ounce loaf. Six slices would yield about 115 units.

#### RELATIVE VALUES OF DIFFERENT FORMS OF VITAMIN D

In 1930 the surprising observation was made that viosterol was far less effective, rat unit for rat unit, in curing leg weakness in chickens than was cod liver oil. This observation at once suggested that the two might have different degrees of effectiveness in the human being as well. Quickly investigating this lead, Hess, Lewis and Rivkin<sup>23</sup> reported that the activity of cod

20. For example, in the study of L. T. Davidson, K. K. Merritt and S. S. Chipman (Prophylaxis of Rickets in Infants with Irradiated Evaporated Milk, *Am. J. Dis. Child.* 53:1 [Jan.] 1937) in which prevention of rickets was attempted by the use of irradiated milk alone, the average intake of milk for the full term infants at the age of 1 month was 396 cc. This amount of milk yielded only 57 units of vitamin D. At the age of 6 months the increased amount of milk taken supplied 114 units. In the case of the premature infants the average amount of milk taken at 1 month was 284 cc. The vitamin supplied by this quantity was only 41 units daily! At 6 months the vitamin D supplied had risen to 103 units daily. The need for vitamin D is greatest during the first four months of life, but during this period the intake of milk was so small that the vitamin D requirement was not met.

21. For the methods of preparation and standardization of these varieties of activated milk the following references are available: Becker, J. E., and Conn, L.: How the Potency of Vitamin D Milk is Determined, Ninth Annual Report, New York Association of Dairy and Milk Inspectors, 1935, p. 153. Shrader, J. H.: Fortification of Milk with Vitamin D, *Arch. Phys. Therapy* 15:709 (Dec.) 1934. Krauss, W. E., and Bethke, R. M.: New Developments in the Field of Vitamin D Milk, *Bimonthly Bulletin, Ohio Agricultural Experiment Station* 22:3, No. 184, 1937. Official statements from the Council on Foods of the American Medical Association: The Present Status of Vitamin D Milk, *J. A. M. A.* 108: 206 (Jan. 16) 1937; Vitamin D Fortified Milk, *ibid.* 108:1515 (May 1) 1937. Vitamin D Milk, Current Comment, *ibid.* 108:1894 (May 29) 1937; Vitamin D Milk Produced by Feeding Cows Irradiated Yeast, *ibid.* 109:1814 (Nov. 27) 1937.

22. Bethke, R. M.; Krauss, W. E.; Record, P. R., and Wilder, O. H. M.: The Comparative Antirachitic Efficiency of Vitamin D in Irradiated Milk, Metabolized (Yeast) Milk and Cod Liver Oil, *J. Nutrition* 11:21 (Jan.) 1936.

23. Hess, A. F.; Lewis, J. M., and Rivkin, Helen: Newer Aspects of the Therapeutics of Viosterol (Irradiated Ergosterol), *J. A. M. A.* 94: 1885 (June 14) 1930.

17. Tisdall, F. F.; Drake, T. G. H., and Brown, A. G.: Irradiated Cholesterol in Cure of Human Rickets; Preliminary Communication, *Canad. M. A. J.* 32:490 (May) 1935.  
18. Hood, J. S., and Ravitch, Irene: The Antirachitic Efficiency of Irradiated Cholesterol, *J. Pediat.* 11: 521 (Oct.) 1937.  
19. Drake, T. G. H.; Tisdall, F. F., and Brown, A. G.: A Comparison of the Antirachitic Effect of Irradiated Cholesterol and Cod Liver Oil, *J. Pediat.* 9:421 (Oct.) 1936.

liver oil and that of viosterol for the human being were actually different, 1 rat unit of cod liver oil accomplishing the work of 4 of viosterol. In 1931 Hess, Lewis, MacLeod and Thomas<sup>24</sup> reported further that yeast milk, rat unit for rat unit, was more effective in the human being than cod liver oil or viosterol, the efficiency equivalences being in order of 1:1.25:5.2, respectively. In 1933 Hess and Lewis<sup>25</sup> published evidence that for the human being irradiated milk was even more potent than yeast milk when the two were compared with viosterol. These studies were upsetting: Did the infant stand somewhere between the rat and the chicken in relationship to the two forms of vitamin D? Was vitamin D dispersed in milk superior to vitamin D dispersed in oil?

At least thirty-nine studies have been made in this country and in Canada which bear on these questions. Out of the conflicting and most confusing results only generalizations of a tentative nature are possible.<sup>26</sup> For practical purposes the vitamin D in viosterol may be regarded as being equal to the vitamin D of cod liver oil. If viosterol is inferior to cod liver oil, rat unit for rat unit, and it very likely is, the difference cannot be great or it would have come out more clearly. Vitamin D is more effective dispersed in milk than dissolved in the usual oil menstrua. Milk enriched with vitamin D in the three different ways may be regarded from the practical point of view, rat unit for rat unit, as having equal value. But evidence suggests that the vitamin D, unit for unit, in irradiated milk may be superior to that in metabolized milk. Vitamin D milk having a potency of 400 units per quart will supply enough vitamin D to meet the requirements of the majority of full term infants. On the other hand, it seems fairly clear that irradiated milk has too low a potency (135 units per quart) to be relied on for this purpose. Four hundred units of vitamin D per quart of milk may be regarded as the minimum concentration in that menstruum to be relied on for protection of the infant. This subject has been discussed in great detail by Jeans.<sup>27</sup> In regard to vitamin D in the oil menstrua, the situation is too confused to permit even tentative judgment. It is suggested that, in the case of the fish liver oils and viosterol, for working purposes from 800 to 1,000 units be regarded as the lowest level which it is wise to employ for the infant.

24. Hess, A. F.; Lewis, J. M.; MacLeod, F. L., and Thomas, B. H.: Antirachitic Potency of the Milk of Cows Fed Irradiated Yeast or Ergosterol, *J. A. M. A.* **97**: 370 (Aug. 8) 1931.

25. Hess, A. F., and Lewis, J. M.: An Appraisal of Antirachitics in Terms of Rat and Clinical Units, *J. A. M. A.* **101**: 181 (July 15) 1933.

26. The problem is beset with great practical difficulties. The tests must be made on infants, but infants are available, relatively speaking, only in small numbers and some must be set aside for control purposes. Furthermore, infants are not uniform test subjects. They vary in age, diet, racial stock and individual constitution. The diagnosis of rickets and treatment cannot be relied on to carry out the treatment.

The study of each child must last for weeks (curative) or months (preventive), but the season when the study can be carried out without great liability to error is limited to five months. To make matters still more difficult, the available criteria for the detection of rickets in its early stages are not entirely satisfactory. The early clinical signs of rickets are notoriously deceiving and cannot be relied on. When the rickets becomes advanced, the x-rays furnish an accurate means of recognition, but in the early stages of the disease their use is attended by error of unknown, but probably considerable, magnitude. Finally, the substances to be compared number at least four, which has caused subdivision into groups so small that results are meaningless. Although the complexities of the problem offer excuse, a considerable proportion of the studies made have been badly thought out or carelessly done or carried out on too small or too heterogeneous a collection of infants to make the results significant. In a number of instances the methods of procedure employed have precluded a comparison of the results with those of other studies. I am inclined to agree with Jeans that the hope of solution of the problems involved lies in carefully conducted inpatient studies in which the diet and environmental conditions can be controlled and the really accurate methods of measuring vitamin D deficiency (measurements of the calcium and inorganic phosphorus in the blood serum and of the calcium and phosphorus balance) can be employed, but there have been few of these.

27. Jeans, P. C.: Vitamin D Milk: The Relative Value of Different Varieties of Vitamin D Milk for Infants; A Critical Interpretative Review, *J. A. M. A.* **106**: 2066 (June 13), 2150 (June 20) 1936.

It is a fortunate circumstance in deciding on doses of vitamin D that exact knowledge concerning the lower levels of requirement is not necessary because there is at present no reason to believe that amounts of vitamin D well above the minimum levels have any deleterious influence. The rule which the physician should follow in prescribing vitamin D is to administer it in ample enough quantity to cover any possible requirement.

#### THE PREVENTION OF RICKETS AND INFANTILE TETANY IN THE AVERAGE CASE

*The Use of Vitamin D in Oils.*—The period of greatest susceptibility to rickets is the first months of life. Whatever antirachitic substance is employed, it is important that full doses be reached early, certainly during the second month. Cod liver oil is taken as a paradigm. In my opinion its administration should be started at the beginning of the third or fourth week, with a dose of one-half teaspoonful (200 units); after two or three days this should be increased to 1 teaspoonful, so that at the end of the third or fourth week the dose is about 400 units. During the fourth or fifth week the dose is raised to 2 teaspoonfuls (about 800 units). According to circumstances this level may be allowed to stand or may be raised during the second month to 3 teaspoonfuls (1,200 units) daily. There is no possible objection to giving 1,200 units of cod liver oil daily if it is well taken and borne. Indeed it is advisable to give this dose if reason exists for thinking the infant particularly liable to rickets. The dose of from 800 to 1,200 units should be given throughout the first year. Eight hundred units should be given throughout the second year.

In most instances difficulties in administration do not occur during the first year but usually do arise some time during the second. When this happens it is advisable to turn to one of the concentrated fish liver oils, viosterol in oil or milk activated with vitamin D.

Cod liver oil, like liquid petrolatum, causes lipid pneumonia<sup>28</sup> if it runs down the larynx into the lungs or is aspirated after vomiting. It should not be used, therefore, if vomiting occurs frequently. As already pointed out, it should not be given to premature infants if concentrated preparations are available.

The question is often asked whether the use of cod liver oil should be continued during the summer, since the need is less then on account of the wealth of ultraviolet light in the sun's rays at that season. Theoretically, if the infant is well exposed to the summer sun's rays daily, the dose of cod liver oil (or other antirachitic preparation) can be reduced or the administration stopped altogether. Practically, it is good policy to continue through the summer, because interruption often breaks down habit on the part of mother as well as child and makes resumption difficult or impossible. If cod liver oil is under suspicion as the cause of digestive disturbances or is distasteful, it is best to substitute some other preparation of vitamin D.

If it is decided to use a concentrated vitamin D preparation, such as one of the fish liver oils, a fish liver oil enriched with viosterol, viosterol in oil or irradiated cholesterol, the procedure is the same as that outlined; namely, to begin in the third or fourth week and increase the dose rapidly to 800 units. Depending on circumstances, the dose may remain the same or it may be increased to 1,200 units daily. The dose should be

28. Goodwin, T. C.: Lipoid Cell Pneumonia, *Am. J. Dis. Child.* **18**: 309 (Aug.) 1934.

maintained for the first two years as described under the heading "Cod Liver Oil." The mode of administration has already been described.

*The Use of the Different Forms of Vitamin D Milk.*—If milk is employed as the vehicle for vitamin D, the quantity given must always be chosen by the caloric, never by the vitamin D, need. If the quantity is insufficient to supply the vitamin D need, it should be supplemented with vitamin D from some other source. As already indicated, metabolized vitamin D milk and fortified vitamin D milk are potent enough to be relied on to prevent the development of rickets in the majority of full term infants. It is wise, however, especially if the infant is not under close supervision, to supplement with one of the oils containing vitamin D during the first six months. Four hundred units of the oil preparation should be given, beginning at the third or fourth week of life. If irradiated milk with its low unitage is employed, it must certainly be liberally supplemented with some other preparation of vitamin D throughout the first year.

#### PREVENTIVE MEASURES FOR ESPECIALLY SUSCEPTIBLE INFANTS

For the protection of premature infants and those who are peculiarly susceptible to rickets, the different forms of vitamin D milk may prove insufficient. No reason exists why they should not be used, but liberal supplementation with preparations highly concentrated in vitamin D is imperative. The best course is to treat the infant as if the activated milk did not supply any vitamin D at all. To premature infants it may be necessary to give 1,000, 5,000 or 10,000 units or for a time even more daily in the form of the highly concentrated fish liver oils, viosterol in oil or other vitamin D preparation. In the case of especially susceptible full term infants and older children it is sometimes necessary to exceed 30,000 units daily. The physician discovers that the case is one of special requirement only when the ordinary preventive treatment proves insufficient. The course then is to increase the dose until an adequate therapeutic level is reached. It is wise to allow three weeks to elapse between increases in doses, because that length of time is needed for effects to become fully evident. When an increase becomes indicated it should be made boldly; i.e., from 5,000 to 10,000 units should be given. How to watch in order to make sure that the dose is holding the rachitic tendency in check is discussed later.

#### HOW TO CURE RICKETS

Amounts of vitamin D which will prevent rickets in a given case will always cure the disease, but often too slowly. If rickets exists, it is best to use large enough doses of vitamin D to end the disease rapidly. When the disease is under control the doses can be lowered. The vitamin D milks are not potent enough to meet the emergency of the cure of rickets, and cod liver oil itself must be abandoned occasionally for this reason.

If cod liver oil is again taken as a paradigm, the curative dose in the ordinary case is 1,200 units (12 Gm., or three teaspoonfuls) daily. This dose in the form of cod liver oil or the highly concentrated fish liver oils and viosterol preparations is sufficient to bring advanced rickets under control within three weeks in the great majority of cases. If larger doses of vitamin D are required, as happens occasionally, it is best to

use the concentrated forms of vitamin D. Sometimes, particularly in the case of premature infants, one is forced to give daily from 10,000 to 20,000 units or occasionally even more in order to bring the disease to a complete termination, and in the case of some older children one may be obliged to raise the dose to 60,000 units daily or even to exceed that amount (see treatment of refractory rickets). When the rickets has been stopped, as ordinarily happens in a month's time, the dose of vitamin D can be tapered off to lower levels but often not to the low preventive levels which serve for the average infant. In the case of some children in whom the tendency to rickets is obstinate, large doses of vitamin D may be required indefinitely. In the case of premature infants the need of large doses is usually temporary.

#### HOW TO TREAT INFANTILE TETANY WITH VITAMIN D

The same rules apply to the vitamin D treatment of infantile tetany as apply to the treatment of rickets with this exception, that during the first days calcium in some form should be administered with the vitamin. The explanation for this advice is that the initial action of vitamin D in some cases is to cause a depression of the serum calcium content at the same time that it causes an elevation in the level of the inorganic phosphorus. The lowering of the serum calcium excites an outbreak of the tetany. This possibility is avoided if calcium is given simultaneously. If calcium chloride is employed it is advisable to administer from 3 to 4 Gm. as an initial dose, followed by 1 Gm. four times a day for two or three days and then 1 Gm. twice a day. The administration of calcium can usually be stopped entirely at the end of a week or ten days, but the vitamin D treatment should be continued.

#### VITAMIN D IN THE TREATMENT OF REFRACTORY RICKETS

The physician may occasionally encounter a child with rickets which will not yield to vitamin D, even in large doses. Refractory rickets is most often discovered in children above 3 years of age (late rickets). The survival of the rickets into the age period when it ordinarily dies out means either that extraordinarily bad environmental and dietetic conditions keep the disease alive or else that some not understood peculiarity in the child exists which renders the lime salt-depositing mechanism insensitive to the presence of vitamin D. The manifestations, clinical, x-ray, serologic and metabolic, are essentially the same as those in the ordinary infantile form. The diagnosis of refractory rickets must be made by trial and failure of vitamin D therapy. The therapeutic secret in some cases, as discovered through the audacity of Albright, Butler and Bloomberg,<sup>29</sup> is to increase the dose of vitamin D until an effect is produced. In their case (that of a boy of 16 years whose rickets had persisted from infancy in spite of the various orthodox therapeutic procedures) it was necessary to increase the dose to between 1,000,000 and 1,500,000 units daily before healing was induced! Now to maintain the normal state, Albright<sup>30</sup> states, it is necessary to give 150,000 units daily. In a similar case, that of a 7 year old child, presently to be reported by Guild and Wilkins, it has been necessary to raise the dose to 300,000 units daily to make calcifi-

29. Albright, Fuller; Butler, A. M., and Bloomberg, Esther: Rickets Resistant to Vitamin D Therapy, *Am. J. Dis. Child.* 54: 529 (Sept.) 1937.

30. Albright, Fuller: Personal communication to the author.

cation of the skeleton complete. In both cases proof was established that the fault was not failure to absorb vitamin D from the alimentary tract. Probably instances are extremely rare in which such enormous doses of vitamin D are required. Most cases of refractory rickets of the kind under discussion will yield to the administration of 50,000 or 60,000 units daily.

Before the physician concludes that the condition before him is refractory rickets, he must ascertain, first, that it is not the fairly infrequent disease renal hyperparathyroidism (renal osteitis fibrosa, renal rickets; see Park and Eliot<sup>31</sup> for points in differential diagnosis), which is not influenced favorably by vitamin D therapy, and, second, that it is not one of the rare, recently discovered varieties of endogenous rickets, which are by-products of obscure metabolic disturbance and not dependent at all on vitamin D deficiency or cured by vitamin D administration. Instances of endogenous rickets have been described by de Toni,<sup>32</sup> Fanconi,<sup>33</sup> Debré, Marie, Cléret and Messimy<sup>34</sup> and Schier and Stern<sup>35</sup> and probable instances by Ullrich<sup>36</sup> and Schlesinger.<sup>37</sup> The characteristic features are glycosuria with a low blood sugar content (renal diabetes), acidosis due to the presence of an unidentified organic acid, retardation in physical development (dwarfism) and rickets of an osteoporotic type, which may be extreme. Particularly if glycosuria is found, attention should be directed to the possibility that the condition belongs in this curious category.

Probably another form of rickets of endogenous origin has been described by Kaufmann<sup>38</sup> and by Lignac.<sup>39</sup> Disturbance in cystine metabolism, giving rise to cystinuria, and retardation of growth are characteristic features.

In this connection I must call attention also to reports of refractory rickets in which success in treatment was thought to depend on the administration of alkali.<sup>40</sup> In Bornscheuer's case improvement is said to have occurred when the vitamin D treatment was stopped and the patient placed on a diet yielding a large excess of base. In Boyd's case and in that of Stearns and Warweg the rickets treated with vitamin D yielded on the additional administration of sodium bicarbonate.

Finally I would call attention to the fact that in obstructive jaundice vitamin D is not absorbed well from the alimentary tract. Heymann<sup>41</sup> has recently brought forward additional experimental evidence that the bile is essential for the absorption of vitamin D.

Under the title "Rachitis Hepatica," Gerstenberger<sup>42</sup> reported two cases of rickets in infants suffering from congenital obliteration of the bile ducts. He considered the rickets refractory to vitamin D. In all probability the disease was ordinary infantile rickets due to failure of absorption of the small quantities of vitamin D administered.<sup>43</sup>

#### THE PRODUCTION OF RAPID HEALING

Occasionally it is important to effect a rapid cure of rickets. For example, in "thoracic rickets," described by Park and Howland,<sup>44</sup> the weakness of the thorax menaces life. Under such circumstances it is incumbent on the physician to supply rigidity to the thoracic bellows as quickly as possible. In the case of a baby aged 8 months suffering from advanced rickets, one can give daily doses of 50,000 units of vitamin D. When the healing begins, as can be detected by means of roentgenograms or determinations of the calcium and inorganic phosphorus, the dose should be reduced. Harnapp,<sup>45</sup> Bischoff,<sup>46</sup> and Schirmer<sup>47</sup> have given infants single doses of 600,000 units without bad effect. After a single dose the vitamin probably remains in the body for a number of weeks.<sup>48</sup> I do not recommend the single dose method. The diet should contain ample calcium and phosphorus.

#### HOW TO GAGE THE SUCCESS OF VITAMIN D THERAPY

One can assume that preventive treatment is succeeding if the signs of rickets do not make their appearance in the roentgenogram of the radius and ulna and—provided the infant is full term—if the level of the calcium of the serum remains above 9 mg. and that of the inorganic phosphorus above 5 mg. per hundred cubic centimeters. Rickets can develop in the premature baby even though the levels of calcium and inorganic phosphorus are within the range accepted as normal (calcium 10 mg. and inorganic phosphorus 5 mg. per hundred cubic centimeters of blood). Periodic estimations, at monthly or two-monthly intervals, of the calcium and inorganic phosphorus in the blood serum and x-ray examinations are the most reliable means of determining that rickets is not developing. However, for all practical purposes one can be sufficiently certain that the preventive treatment is successful if clinical evidences of rickets do not make their appearance.

If the problem is one of cure, the condition ordinary rickets and the dose of vitamin D about 1,200 units, the first indication of therapeutic effect will be a rise in the level of inorganic phosphorus in the serum. This begins about ten days after treatment has been begun. About three weeks after the beginning of treatment the shadows of fresh deposits of lime salts make their appearance in the roentgenogram, often in the form of a transverse line, usually broken, crossing the transparent cartilage just beyond the end of the shaft. As

31. Park, E. A., and Eliot, M. M.: Rickets, in Brennemann, Joseph: Practice of Pediatrics, Hagerstown, Md., W. F. Prior Company, Inc., 1937, vol. 3, chapter 29.

32. de Toni, G.: Remarks on the Relations Between Renal Rickets (Renal Dwarfism) and Renal Diabetes, Acta Paediat. 16: 479, 1933.

33. Fanconi, G.: Der frühinfantile nephrotisch-glykosurische Zwergwuchs mit hypophosphatämischer Rachitis, Jahrb. f. Kinderh. 147: 299, 1936.

34. Debré, Robert; Marie, Julien; Cléret, F., and Messimy, R.: Rachitisme tardif coexistant avec une néphrite chronique et une glycosurie, Arch. de méd. d. enf. 37: 597 (Oct.) 1934.

35. Schier, A., and Stern, A.: Incurable Rickets, Arch. f. Kinderh. 78: 176 (June) 1926.

36. Ullrich, O.: Ueber neuere Behandlungsverfahren der englischen Krankheit im Dienste der allgemeinen Rachitisbekämpfung: Versager der Rachistherapie und Tier-rachitis, München med. Wchnschr. 76: 1433 (Aug. 23) 1929.

37. Schlesinger, Bernard: Renal Dwarfism and Rickets, Proc. Roy. Soc. Med. 25: 10, 1931.

38. Kaufmann, E.: III. Konkrementbildung in der Niere, im Nierenbecken und in den ureteren Nephrolithiasis, Nierensteinkrankheit, Spec. path. Anat. 2: 1107, 1922.

39. Lignac, G. O. E.: Cystin Metabolism in Children, Deutsches Arch. f. klin. Med. 145: 139 (Oct.) 1924.

40. Boyd, J. D.: Endogenous Rickets, Proc. Soc. Exper. Biol. & Med. 26: 181, 1928. Bornscheuer, F.: Ein Fall von endogener gegen D-vitamin und Licht resistenter perennierender Rachitis, Ztschr. f. Kinderh. 51: 56, 1931. Stearns, Genevieve, and Warweg, Edna: Studies of Phosphorus of Blood, Phosphorus Partition in Whole Blood and in Serum and Serum Calcium and Plasma Phosphatase During Healing of Late Rickets, Am. J. Dis. Child. 49: 79 (Jan.) 1935.

41. Heymann, Walter: Metabolism and Mode of Action of Vitamin D: IV. Importance of Bile in the Absorption and Excretion of Vitamin D, J. Biol. Chem. 122: 249 (Dec.) 1937.

42. Gerstenberger, H. J.: Rachitis hepatica, Monatschr. f. Kinderh. 56: 217, 1933.

43. Thoenes, F., and Gruson, W.: Zur Frage der "Rachitis hepatica," Monatschr. f. Kinderh. 67: 134, 1936.

44. Park, E. A., and Howland, J.: The Dangers to Life of Severe Involvement of the Thorax in Rickets, Bull. Johns Hopkins Hosp. 32: 362 (April) 1921.

45. (a) Harnapp, G. O.: Zur Pathogenese der Spasmophilie, Behandlungsvorschläge mit A. T. 10, Monatschr. f. Kinderh. 63: 262, 1935; (b) Harnapp, G. O.: Einmalige Verabfolgung von Vitamin D<sub>2</sub>, ibid.

46. Bischoff, F.: Rachitisbehandlung mit konzentrierten Vigantol, Ztschr. f. Kinderh. 51: 2, 1937.

47. Schirmer, E.: Rachitisbehandlung mit einmaliger Vitamingabe, Ztschr. f. Kinderh. 51: 269, 1937.

48. Metabolism and Mode of Action of Vitamin D: D in Different Tissues in Vivo, J. Biol. Chem. 122: 249 (Dec.) 1937.

treatment continues, this line of deposits becomes thicker and more dense. Finally the gap between it and the end of the shaft becomes completely filled with lime salts. The filling in process may take two months. The pattern of the rickets may last for a very long time after the disease has completely stopped.

This is the ordinary course of events, but if larger doses of vitamin D are given the changes in the blood and the roentgenograms can be more rapid. For example, after very large single doses of vitamin D Harnapp,<sup>49b</sup> Bischoff<sup>46</sup> and Schirmer<sup>47</sup> reported rises in the serum calcium and phosphorus content and signs of fresh depositions of lime salts in the roentgenograms as early as the fifth day.

It is difficult to be sure of the healing effect of treatment from clinical examination alone, for recession of the deformities is gradual. Perhaps the most obvious clinical indication of successful treatment is the improvement in muscular function. The child begins to make efforts to walk or to sit up. He seems stronger and more active.

If the treatment is adequate the improvement will be steadily progressive; if inadequate, either no improvement or improvement which presently stops will occur.

#### VITAMIN D IN THE TREATMENT OF OTHER CONDITIONS

The use of vitamin D has been extended to a variety of diseases far removed from rickets. Apparently the basis of its use for some of the diseases has been the belief that its toxic effects are beneficial. The justification is entirely empiric.

I mention the diseases in question and give references to the literature but cannot pass judgment. I remark merely that the evidence offered in favor of the therapeutics in some instances seems rather slim.

Rappaport and Reed<sup>49</sup> have reported favorable effects from massive doses of vitamin D for hay fever; Dreyer and Reed,<sup>50</sup> Wyatt, Hicks and Thompson,<sup>51</sup> Livingston,<sup>52</sup> Vrtiak and Lang<sup>53</sup> and Farley,<sup>54</sup> for chronic arthritis. The dose ranged from 200,000 to 1,000,000 units (in one instance) given daily over periods of weeks or months. Toomey<sup>55</sup> has suggested vitamin D therapy as a possible means of increasing resistance to infantile paralysis. Kraffka<sup>56</sup> and more recently Ceder and Zon<sup>57</sup> (the latter authors used massive doses) have reported striking effects in psoriasis. Weld<sup>58</sup> has reported favorable action in increased capillary permeability, and McNealy, Shapiro and Melnick<sup>59</sup> and Johnston,<sup>60</sup> in checking of the bleed-

ing tendency in cases of obstructive jaundice. Richardson<sup>61</sup> stated that vitamin D given during pregnancy may reduce the duration of labor and the loss of blood. Theobald<sup>62</sup> has found it useful in treating the toxemia of pregnancy.

#### EVIDENCE THAT DOSE IS EXCESSIVE

The idea that vitamin D in the form of irradiated ergosterol is an extremely toxic substance was derived from the use of the old German preparation vigantol, in the wake of which metastatic calcification was observed by a variety of investigators.<sup>63</sup>

In the treatment of chronic arthritis and psoriasis enormous doses of vitamin D have been employed. From these experiences, which have been limited to adults, it is possible to obtain an idea of the symptoms produced by overdoses. Wyatt, Hicks and Thompson,<sup>51</sup> who limited the dose to 300,000 units daily, reported in one case violent persistent nausea, intense headache and profuse sweating and in another severe diarrhea, loss of appetite and slight headache. Vrtiak and Lang<sup>53</sup> used from 150,000 to 250,000 units daily over periods of months. They reported that in all their patients nausea developed and in some nocturia and frequent micturition. Farley,<sup>54</sup> who in most instances administered 200,000 units but in cases of obstinate arthritis increased the dose to 300,000, 600,000 units and even (in one case) 1,000,000 units daily, noted nausea and increased micturition. He stated that toxic symptoms seldom developed if the dose remained under 400,000 units. In Guild and Wilkins' 7 year old child with refractory rickets receiving 300,000 units, the symptoms indicating that the proper dose had been exceeded were loss of appetite, pallor and lassitude.

In contrast to the indefinite evidence afforded by the symptoms enumerated, clear indications of an overdose may be found in the urine and in the calcium and the inorganic phosphorus level of the blood.

If the dose is high the physician should examine the urine daily, looking in particular for calcium casts, such as Albright and Bloomberg<sup>64</sup> have described in cases of hyperparathyroidism (they will not be found if the urine is sufficiently acid). He should also keep close track of the level of the calcium and the inorganic phosphorus in the blood serum and if rickets is present of depositions of lime salts at the ends of the radius and ulna as revealed in roentgenograms. How often he should examine the blood and have roentgenograms taken depends on the size of the dose and the age and size of the child. If extremely large doses, for example 100,000 units or more, are given, examinations of the blood ought to be made at weekly or, in critical situations, at semiweekly intervals. X-ray examinations of the bones should be made at weekly or biweekly intervals. Elevation of the serum calcium above 12 mg. per hundred cubic centimeters is the great danger signal.<sup>65</sup> In Ceder and Zon's<sup>57</sup> carefully watched patients (adults receiving 300,000 units) the serum

49. Rappaport, B. Z., and Reed, C. I.: Viosterol of High Potency in Seasonal Hay Fever and Related Conditions, *J. A. M. A.* **101**: 105 (Jan. 8) 1933.

50. Dreyer, Irving, and Reed, C. I.: The Treatment of Arthritis with Massive Doses of Vitamin D, *Arch. Phys. Therapy* **16**: 537 (Sept.) 1935.

51. Wyatt, B. L.; Hicks, R. A., and Thompson, H. E.: Massive Doses of Vitamin D in the Treatment of Proliferative Arthritis, *Ann. Int. Med.* **10**: 534 (Oct.) 1936.

52. Livingston, S. K.: Vitamin D and Fever Therapy in Chronic Arthritis, *Arch. Phys. Therapy* **17**: 704 (Nov.) 1936.

53. Vrtiak, E. G., and Lang, R. S.: Observations on the Treatment of Chronic Arthritis with Vitamin D, *J. A. M. A.* **106**: 1162 (April 4) 1936.

54. Farley, R. T.: Management of Arthritis, *Illinois M. J.* **71**: 74 (Jan.) 1937.

55. Toomey, J. A.: Ingestion of Vitamins A, B, C and D and Poliomyelitis, *Am. J. Dis. Child.* **53**: 1202 (May) 1937.

56. Kraffka, Joseph, Jr.: Simple Treatment for Psoriasis, *J. Lab. & Clin. Med.* **21**: 1147 (Aug.) 1936.

57. Ceder, E. T., and Zon, Leo: Treatment of Psoriasis with Massive Doses of Crystalline Vitamin D and Irradiated Ergosterol: A Preliminary Report, *Pub. Health Rep.* **52**: 1580 (Nov. 5) 1937.

58. Weld, C. B.: A Capillary Resistance Test and Its Relation to Vitamins C and D, *J. Pediat.* **9**: 226 (Aug.) 1936.

59. McNealy, R. W.; Shapiro, P. F., and Melnick, P.: Effect of Viosterol in Jaundice, *Surg., Gynec. & Obst.* **60**: 785 (April) 1935.

60. Johnston, L. B.: Use of Massive Doses of Viosterol to Reduce Bleeding Time in Obstructive Jaundice: Report of Three Cases, *J. Med.* **18**: 235 (July) 1937.

61. Richardson, G. C.: Viosterol in Pregnancy: Review of 300 Cases, *Illinois M. J.* **65**: 367 (April) 1934.

62. Theobald, G. W.: Effect of Calcium and Vitamins A and D on Incidence of Pregnancy Toxaemia, *Lancet* **1**: 1397 (June 12) 1937.

63. Bills, C. E.: Physiology of the Serols, Including Vitamin D, *Physiol. Rev.* **15**: 1 (Jan.) 1935.

64. Albright, Fuller, and Bloomberg, Esther: Hyperparathyroidism and Renal Disease, with a Note as to the Formation of Calcium Casts in This Disease, *Tr. Am. A. Genito-Urin. Surgeons* **27**: 195, 1934.

65. Albright, Butler and Bloomberg<sup>64</sup> wrote: "The calcium content of the serum rose to 12.7 mg. and the phosphorus content to 3.5 mg., and the phosphatase content fell to 13.5 Bodansky units per hundred cubic centimeters. This increase in the serum calcium and phosphorus was fortunately noted at once, so the dose was lowered and was eventually stopped for a short time. At the height of the rise in the blood values the urine was loaded with calcium and contained many calcium casts such as have been observed in cases of hyperparathyroidism."



calcium rose to levels varying from 12 to 16 mg. per hundred cubic centimeters. With the rise in the serum calcium a rise in inorganic phosphorus takes place, but if rickets is present this may not reach even the normal level. If the excessive vitamin D therapy is persisted in, undoubtedly the inorganic phosphorus level as well as the calcium level will become much elevated and metastatic calcification will occur, as is regularly the case in animals subjected to toxic doses of vitamin D.<sup>66</sup> The rule holds that the dose of vitamin D will not become toxic so long as the calcium and inorganic phosphorus levels in the blood are not affected. Apparently toxic action does not depend on the level of vitamin D in the blood but rather on its effects on the calcium and phosphorus metabolism. For example, in Guild's case of refractory rickets (previously referred to) the concentration of vitamin D in the blood rose to 200 times the normal before signs of an overdose showed themselves. If rickets exists, great aid is furnished by roentgenograms alone. If the film reveals shadows which indicate healing, one knows at once that the vitamin has begun to act and that the calcium and phosphorus levels have been affected. The signs of healing in the roentgenogram do not mean that the dose of vitamin D should be lowered, but they inform the physician that the hoped for healing has begun and place him at once on his guard against toxicity.

The physician should be on his guard for signs of toxicity in the child if the daily dose exceeds 50,000 units. If the patient is a very small infant, e. g., a premature infant, the physician should watch with care even if the dose is 20,000 or 30,000 units. Toxic manifestations will not occur immediately but only after a period of two or three weeks and need not be expected so long as the rickets, if this condition is present, remains unaffected. With the adult the physician ought to exercise great caution in venturing into the unknown with daily doses of 200,000 units or more.

#### VITAMIN D AND THE TEETH

It is certain that rickets causes enamel hypoplasia.<sup>67</sup> This condition can be prevented by the prevention of rickets. Evidence is accumulating that administration of vitamin D during childhood, particularly in the early years, reduces the incidence of dental caries.<sup>68</sup> The permanent teeth are in process of development from birth during the entire period of growth. The possible influence of vitamin D in the protection of the teeth from hypoplastic deformities and caries is a sufficient reason for the continuation of the vitamin D therapy throughout child life.

#### THE VITAMIN D REQUIREMENT AFTER THE SECOND YEAR

The reason usually given to explain the particular susceptibility of the infant to rickets is rapid growth, but this explanation really has no meaning. The older child is occasionally subject to rickets ("late rickets"), but the adult never has osteomalacia (rickets after growth has ended) unless under extreme provocative conditions. It is not understood why the child and

adult are so insusceptible. The adult rat is far more resistant to rickets-producing diets than the young animal, but even the young rat does not appear to need vitamin D if the diet is perfectly constituted. If, however, deficiencies in the calcium and phosphorus are sufficiently great, vitamin D may exert a striking rectifying effect. It is easy to demonstrate the protecting influence of vitamin D on the skeleton of the pregnant rat. These experiences can probably be carried over in principle to the human adult and to the older child. If the diet is excellent—this includes the supply of calcium and phosphorus—either no vitamin D is required or a very small quantity suffices. If, on the other hand, the supply of calcium and phosphorus is at fault, vitamin D will exert a helpful influence.

A large proportion of children and adults must receive a modicum of vitamin D in their food. This modicum, which would be totally inadequate for the infant, may be significant for the adult because of his small requirement. The facts in this regard simply are not known. On the other hand, great numbers of people receive no vitamin D or virtually none from their food. A large proportion of children and adults must obtain liberal supplies of vitamin D from exposure to the sun in the summer, late spring and early fall months, when the active ultraviolet rays are in abundance and this vitamin is probably stored for weeks in the body.<sup>48</sup> Others, particularly those confined indoors or to the hearts of cities, derive little or no vitamin D from this source. Moreover, large groups of persons are denied the sun's rays the year round because of their occupations, e. g., miners, night workers and indoor workers in general, or because of personal habits or necessities (invalids). These are the facts.

In the case of the child the physician should be certain that the administration of vitamin D is not stopped at the end of the second year. It is undoubtedly more important for the child to receive it during the third than during the fourth year and during the fourth than during the fifth. The need of the child for the vitamin probably declines with increasing age. Nevertheless I recommend that it be given throughout the growing period. A sufficient reason for this advice is the possibility that the administration of the vitamin may aid in improving the durability of the teeth.

In the case of the adult the course is not so clear. Probably in most cases in which a physician has the opportunity to advise, the patient does not require vitamin D from an additional source and would not feel different or actually be in better health if he received it. On the other hand, in many instances the patient would probably be benefited, perhaps greatly, by receiving it. It seems a sound policy to advise vitamin D for (1) all patients who by force of circumstances are deprived of the opportunity of obtaining the vitamin from the sun (night workers, factory workers and persons confined indoors, in particular invalids), (2) for all persons whose diet is lacking in milk, the sole valuable source of calcium, or is generally poor, (3) for the aged, particularly when they are limited as to diet and confined indoors, (4) for persons suffering from fractures or having had operations on bones and (5) for all pregnant women, no matter what the diet or the season. With regard to pregnancy, evidence which cannot be disregarded exists that vitamin D is a safeguard both to mother and to infant. The physician should unfailingly see that every woman during pregnancy receives vitamin D.

66. Shelling, D. H., and Asher, Dorothy E.: Calcium and Phosphorus Studies: IV. The Relation of Calcium and Phosphorus of the Diet to the Toxicity of Viosterol, *Bull. Johns Hopkins Hosp.* 50: 318 (May) 1932.  
67. Eliot, M. M.; Souther, S. P.; Anderson, B. A., and Armin, Sumner: A Study of the Teeth of a Group of School Children Previously Examined for Rickets, *Am. J. Dis. Child.* 46: 458 (Aug.) 1933.  
68. Agnew, M. C.; Agnew, R. C., and Tisdall, F. F.: The Production and Prevention of Dental Caries, *J. Am. Dent. A.* 20: 193 (Feb.) 1933. Committee for the Investigation of Dental Disease: The Influence of Diet on Caries in Children's Teeth, Medical Research Council, Special Report Series No. 211, London, His Majesty's Stationery Office, 1936.

I want to point out that it would be of undoubted benefit if the habit of taking vitamin D in some form were universal. If our food were like that of the Eskimo, with vitamin D a regular ingredient, rickets would disappear almost entirely, the state of the teeth might undergo improvement and the level of health of many persons might be raised. I believe that the physician ought to extend the use of vitamin D wherever he is able, in particular during the winter months, even if he is unable to measure benefit in individual cases.

As for the preparation of vitamin adapted for the adult and child, cod liver oil is not especially suitable, but the other sources are, the vitamin D milks, the preparations of viosterol in oil and the highly concentrated fish liver oils. For the pregnant woman I suggest a daily dose of 800 units and for the child a dose of from 300 to 400 units. I presume that for the average adult a dose of 135 units daily, such as would be supplied by a quart of irradiated milk or six slices of vitamin D bread, would be more than ample, but I have no means of even guessing what the amount should be.

Before leaving this subject I wish to make two practical comments. First, since the adequacy of all diets in vitamin A for older children and adults has not been satisfactorily established, I suggest that the preparations which combine A and D be chosen in preference to those which contain D alone. Vitamins A and D go together (fat-soluble) and may well be administered together. The concentrated fish liver oils, which are rich in vitamin A as well as D, are to be preferred to the viosterol group for this reason. Second, since older children and adults often take very little milk, fortified and metabolized vitamin D milks are to be preferred as sources of vitamin D to irradiated milk. One glass of irradiated milk, which is as much milk as many adults take in a day, would yield only 67 units of vitamin D. In the light of the previous comment, fortified milk is superior if the addition of the fish liver oil concentrate increases the content of vitamin A as well as that of vitamin D.

#### RELATIVE COST OF THE DIFFERENT PREPARATIONS OF VITAMIN D

The only reasonable way to compute the relative values of the different preparations of vitamin D is per unit of the contained vitamin. On this basis cod liver oil is the cheapest. It is interesting that some of the cod liver oils having the higher unitage, though costing more per volume, are actually the most economical. For example, at a local inquiry it was found that the cod liver oil with the highest unitage (350 units per gram) sold at 90 cents a pint; its calculated cost per 1,500 units was eight tenths of a cent. Oil selling at 50 cents a pint and having only the required 85 units per gram cost twice as much per 1,500 units, namely, 1.9 cents. The oils depending on viosterol for their enrichment in vitamin D and viosterol itself cost in general twice as much as the concentrated fish liver oils. The fish liver oils highly concentrated in vitamin D are as economical sources as many of the poorer brands of cod liver oil. From the standpoint of unitage, irradiated milk is about one third as potent as metabolized or reinforced milk. In the case of each of the vitamin D milks the enrichment process usually adds 1 cent a quart, although some dairies have not increased the price and vitamin D evaporated milk sells at the same price as ordinary evaporated milk.

## Council on Pharmacy and Chemistry

### REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.  
PAUL NICHOLAS LEECH, Secretary.

#### THE COUNCIL ACCEPTS FOR INCLUSION IN N. N. R. SOME PRODUCTS OF THE UPJOHN COMPANY

Until now no product of the Upjohn Company has been accepted by the Council on Pharmacy and Chemistry because of conflicts with the rules of the Council. Under date of Dec. 17, 1937, the firm informed the Council that it wished to work in harmony with the aims and rules of the Council. The firm has demonstrated its willingness to remove certain causes of conflict and has in general shown a commendable desire to meet the requirements of the Council. After considerable correspondence and negotiation, the Council voted to remove application of Rule 11 and to consider products submitted on the basis of their individual merits. Notices of acceptance will appear in the usual manner in the N. N. R. column of THE JOURNAL.

#### NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

**PHENOBARBITAL** (See New and Nonofficial Remedies, 1938, p. 123).

**PHENOBARBITAL-THE UPJOHN COMPANY.**—A brand of phenobarbital-U. S. P.

*Phenobarbital Tablets, ¼ grain:* Supplied in both white and green tablets.

Prepared by The Upjohn Company, Kalamazoo, Mich.

*Phenobarbital Tablets, ½ grain:* Supplied in both white and green tablets.

Prepared by The Upjohn Company, Kalamazoo, Mich.

*Phenobarbital Tablets, 1½ grains:* Supplied in both white and green tablets.

Prepared by The Upjohn Company, Kalamazoo, Mich.

**STAPHYLOCOCCUS VACCINE** (See New and Nonofficial Remedies, 1938, p. 427).

The Upjohn Company, Kalamazoo, Mich.

*Staphylococcus Mixed Vaccine.*—A suspension of strains of *Staphylococcus aureus* and *albus* in physiological solution of sodium chloride preserved with 0.5 per cent phenol, containing 1,000 million killed organisms of *Staphylococcus aureus* and 1,000 million killed organisms of *Staphylococcus albus* to each cubic centimeter. Marketed in packages of six 1 cc. ampules and 5 cc. and 20 cc. vials.

**BACTERIAL VACCINE MADE FROM THE TYPHOID BACILLUS** (See New and Nonofficial Remedies, 1938, p. 429).

The Gilliland Laboratories, Inc., Marietta, Pa.

*Typhoid Vaccine.*—Also marketed in vials of 50 cc. containing 1,000 million killed typhoid bacilli per cubic centimeter.

The Upjohn Company, Kalamazoo, Mich.

*Typhoid Vaccine.*—Marketed in packages of three 1 cc. ampules, one containing 500 million and two containing 1,000 million killed typhoid bacilli each suspended in physiological solution of sodium chloride and preserved with 0.5 per cent phenol.

**BACTERIAL VACCINE MADE FROM THE TYPHOID BACILLUS AND THE PARATYPHOID "A" AND "B" BACILLI** (See New and Nonofficial Remedies, 1938, p. 431).

Lederle Laboratories, Inc., Pearl River, N. Y.

*Typhoid Combined Vaccine (Prophylactic).*—Also marketed in packages of one 20 cc. vial containing 1,000 million killed typhoid bacilli, 500 million killed paratyphoid A bacilli and 500 million killed paratyphoid B bacilli per cubic centimeter.

The Upjohn Company, Kalamazoo, Mich.

*Typhoid Paratyphoid Mixed Vaccine.*—A suspension in physiological solution of sodium chloride preserved with 0.5 per cent phenol. Marketed in packages of three 1 cc. ampules, one ampule containing 500 million killed typhoid bacilli and 375 million each of killed paratyphoid A and paratyphoid B bacilli, and two ampules each containing 1,000 million killed typhoid bacilli and 750 million each of killed paratyphoid A and paratyphoid B bacilli. Also marketed in 5 cc. and 20 cc. vials containing in each cubic centimeter 1,000 million killed typhoid bacilli and 750 million each of killed paratyphoid A and paratyphoid B bacilli.

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, SEPTEMBER 24, 1938

## HOUSE OF DELEGATES CONSIDERS NATIONAL HEALTH PROGRAM

The third special session of the House of Delegates in the history of the American Medical Association convened in Chicago September 16, called especially to consider the National Health Program and other matters proposed by the Board of Trustees. On two previous occasions, once when our country was at war and the services of the American Medical Association were required to aid the government in meeting the war needs for medical service, and again when the Social Security Act was before Congress, the House of Delegates met in special session. Following the National Health Conference, government officials indicated that the proposals there made would be drafted into legislation which would be brought before the next Congress. The Board of Trustees called the House of Delegates so that it might establish the policies of the Association specifically with regard to these proposals. Those who read the proposals, which were published in THE JOURNAL July 30, realize that the National Health Program is truly an attempt to chart the proposed expansion of medical and public health activities in the United States during the next ten years. The House of Delegates (see the complete minutes, this issue, page 1191) considered most carefully not only the proposals of the National Health Program but also many plans and proposals from county and state medical societies and from various individuals.

Briefly, the House of Delegates recommended expansion of public health services, as related to the control of certain infectious diseases, maternal and infant welfare, and similar projects, with the definite understanding that the need be established and that they be efficiently handled and economically controlled. The House of Delegates approved the principle of hospital insurance, again with the understanding that it cover only the facilities of the hospital and that professional standards be maintained. It approved the principle of *cash indemnity insurance* for meeting sickness costs, provided these efforts meet the requirements of state laws and that they have the approval of the county and

state medical societies under which they operate. The House of Delegates again recognized the need for complete medical services to the indigent, at the same time emphasizing the desirability of local control. The House recognized that the necessity for state aid might arise in poorer communities and that the federal government might need to provide funds when the state is unable to meet these emergencies. The needs of the medically indigent were considered, and a definition of medical indigence was supplied. Here the House felt that the determination must be made locally as to the group covered by this term, that control of the service should lie with local administration, and that available facilities should be utilized before new facilities were provided. Thus, the House of Delegates felt that there was but little need for the building of new hospitals or the establishment of new diagnostic centers, provided better utilization of hospitals and laboratories already functioning can be devised.

Again the House of Delegates stated its firm opposition to any compulsory sickness insurance plan. Finally, it approved protection against loss of income during illness.

The members of the American Medical Association will do well to read, if not even to learn, the principles established by the House of Delegates. Every member should do all that he can to inform the public concerning these actions. The Association has not abandoned any of its policies for the maintenance of professional standards. It has, however, again recognized the importance of securing wider distribution of medical service.

The Board of Trustees presented to the House of Delegates the statement concerning the proposed investigation by the Department of Justice, which seeks to obtain an indictment of the American Medical Association as a monopoly. The statement has been made repeatedly that the American Medical Association is ready for investigation by any authorized agency, firmly reliant in the belief that its actions are in accordance with its constitutional organization, that they have been taken in the interest of the public health and welfare, and that it has never violated the established laws of this country. The House of Delegates expressed its firm conviction in the truth of these statements and urged the Board of Trustees to oppose with its utmost power, even to the courts of last resort, this apparent attempt to convict the American Medical Association in the eyes of the people of being a predatory, antisocial monopoly.

In this connection, one of the most dramatic phases of the recent meeting of the House of Delegates was the appearance of three representatives of the National Medical Association, an organization of more than 5,000 Negro physicians, who indicated that overtures had been made to them by government officials, with a view to inducing that organization to put its ambitions

in the hands of the government. Notwithstanding these overtures, the National Medical Association, through its committee, expressed a wish to go forward with the American Medical Association as members of a great profession for the public service.

The meeting of the House of Delegates had a most wholesome effect in allaying doubts and fears among the medical profession as to the position of the American Medical Association in relationship to recent propaganda that has been widely circulated in this country. The unanimity of expression and action again indicated that these representatives of 110,000 American physicians are able as a democratic body to express the wishes of the vast majority of the medical profession in this country and to speak with one voice for them.

#### CHANGING POPULATIONS: THE INFERENCES

In an editorial published last week entitled "Changing Populations: The Premise"<sup>1</sup> the latest estimate of probable trends in population as outlined in a recent government monograph<sup>2</sup> was partially analyzed. If correctly anticipated there will be a great change in the age distribution of the population by 1980. According to the hypotheses of low fertility, medium mortality and no immigration there will be in 1980 only about 6½ million under 5 years of age (12,143,000 in 1930), 21½ million between 5 and 20, 44½ million between 20 and 45, nearly 40 million between 45 and 65, and 22 million over 65 (6½ million in 1930). Assuming a medium fertility and medium mortality, there would be more in the younger age groups than in the first hypothesis, 9,906,000, for example, under 5 years of age. With immigration there would be a still slightly higher proportion in the younger age groups. Under any of these hypotheses there would be an increased proportion of elderly (dependents) and a lowered proportion of children (dependents), both factors of economic and social importance. If any of these forecasts prove correct, and there are valid reasons to believe that at least some will, the effects on the nation's fundamental economy will be profound and will require considerable adjustment. It may not, however, be assumed that the results will all be deleterious. While the implications are too numerous to be listed at this time, some of the changes to be expected are of particular interest to the medical profession.

Obviously, if correct, more medical care will be required for the elderly and the adult and less for children. This should be considered in the training of physicians as well as in the provision of hospitals, sanatoriums and homes for old persons. In providing these facilities, adequate recognition of differential

birth rates and future population centers is of integral importance. The types of illness to be expected are of equal importance: with only occasional exceptions it would seem foolish to build many hospitals for contagious diseases of children or institutions devoted to cholera and typhoid; conversely, sanatoriums for old persons and institutions for the care of arthritic patients would seem more in keeping with probable demand.

In the section of the report dealing with health and physical development appear several valuable suggestions together with others which the medical profession will consider an unwarranted distortion of the facts. Many of the factual data are taken bodily from the report of the Committee on the Costs of Medical Care, notwithstanding that some of these figures have been seriously questioned. The report calls attention to the extraordinary advance in the expectation of life—a record attributable largely to the efforts of preventive and curative medicine—to improvements in child health, and to progress in the control of typhoid, tuberculosis and industrial accidents. In spite of the progress which has been made, the deficiencies are emphasized—as indeed they should be—and the extraordinary burden of mental defect and disease, the blind, the crippled and the degenerative diseases are discussed.

Because of the greater life expectancy in New Zealand, mentioned in the previous editorial, that country is selected as a model to be emulated and the inference is drawn that one of the principal reasons for the longer life expectancy is the "more adequate provisions for making medical services generally available to the whole population in that country." However this may be, New Zealand is in the throes of complete reorganization of its "more adequate provisions."<sup>3</sup> It is pointed out that South Dakota and Kansas most closely approximate the life span of New Zealand and that the "more favorable health conditions prevailing in New Zealand may be attributed in part to conditions comparable to those prevailing in our Northwestern states" as well as to the available medical services. This is perhaps an egregious example of unreasonable inference—no real account is taken of all the possible contributory factors such as relative rural and urban distribution, climate, race, heredity, occupation, economic status, comparability of medical care and innumerable other factors. The implied conclusion that medical services supplied as in New Zealand would increase the life span in this country to the level of that country is unwarranted by the evidence submitted.

Whatever the deficiencies in basic assumption or inference contained in this report on the problems of a changing population, it constitutes in its entirety a contribution of great credit to its compilers and the most authoritative statement of probabilities on the subject available today.

1. Changing Populations: The Premise, editorial, J. A. M. A. 111: 1103 (Sept. 17) 1938.

2. The Problems of a Changing Population, Report of the Committee on Population Problems to the National Resources Committee, May 1938.

3. State Medicine in New Zealand, Australian Letter, J. A. M. A. 111: 639 (Aug. 13) 1938.

## Current Comment

### NEW FILMS ON PHYSICAL THERAPY

To stress the importance of physical therapy as an adjunct to the practice of medicine and surgery, the Council on Physical Therapy is utilizing motion pictures as an educational medium. These deal with the value of simple measures such as heat, light, massage and therapeutic exercise, including underwater movements. Apparently one reason why physical therapy has not been accorded more widespread acceptance on the part of the general practitioner is its close association, in his mind, with "machine therapy." This unfortunate connotation has disturbed physicians in some localities. While it is true that the machine is a useful adjunct to the practice of medicine in certain instances, at least 90 per cent of the good accomplished by physical therapy results from the use of simple measures. The new films prepared recently and now available for loan to those wishing them for educational purposes include:

**Aids in Muscle Training:** This film replaces an old one entitled *Simple Measures Facilitating Graduated Active Motion*. In addition to the subjects which were previously considered, such as sling suspension exercises for the upper and lower extremities, graded exercises on a powdered board are shown for the lower extremities. This film also demonstrates three kinds of "walkers" for reeducation exercises.

**Occupational Therapy:** This film replaces the old one of the same title. It shows occupations that may be prescribed by physicians to motivate and control the desired physical or mental activity of the patient and assist in his adjustment to long hospitalization. A section on cerebral palsy is included, picturing indirect muscle training through prescribed activity and stressing the importance of early treatment to prevent growth of faulty habit patterns.

**Underwater Exercises:** This is a new film presenting the therapeutic use of large and small exercise pools, Hubbard tanks and home-made tanks and showing types of exercises given in cases such as infantile paralysis, cerebral palsy and postoperative congenital dislocation of the hip.

**Massage:** This film replaces one which was formerly used to demonstrate the technique of massage, describing the various movements and why they are performed in a given way.

**Contraction of Arteries and Arteriovenous Anastomoses:** This film visualizes the contraction of arteries and arteriovenous anastomoses as seen through a glass chamber installed in a rabbit's ear.

The Council has had several films for loan which have been shown in the past before state, county and local medical societies. Because of their popularity they have become too worn for further projection. However, duplicates have now been made which are in excellent condition. The titles follow:

**Effects of Heat and Cold on Circulation of Blood:** This film shows the effect of heat and cold on circulation as seen through a glass chamber installed in a rabbit's ear.

**Effects of Massage on Circulation of the Blood:** Similar to the foregoing except that it shows the effects of massage.

In addition, two old films are still available on the following subjects:

**Therapeutic Exercises for the Shoulder Joint Following Dislocation:** This film demonstrates static, passive, active and resistive exercises for the shoulder joint, including work with pulley and weight.

**Treatment of Compression Fracture of the First Lumbar Vertebra.**

The films may be procured by writing to the Director of Exhibits of the American Medical Association. An advance request will insure the film being reserved for the desired date.

### CONGENITAL INSENSITIVENESS TO PAIN

A peculiar insensitiveness to pain in three children has been reported by Ford and Wilkins.<sup>1</sup> One, a boy of 9, sustained numerous injuries including fractures, extensive burns and a laceration of the cornea without apparent painful reaction. This child had a normal intelligence and a mild congenital word blindness. The child's behavior and physical and laboratory tests were essentially normal. Another, a boy of 8½, appeared equally insensitive to burns and other injuries. His neurologic examination was negative but his intelligence quotient was only 76. He demonstrated various behavior disorders and had a bad family background and a long history of minor illnesses. He had always been emotional and subject to night terrors and temper tantrums. The third, a girl aged 7, was found insensitive to potentially painful stimuli over the entire surface of the body, although she was not indifferent to pain of visceral origin; neurologic examination gave negative results and the mental age was low normal. In discussing the cases the authors pointed out that the nature of this peculiarity is not clear. All three children could distinguish between the sharp and blunt ends of a pin and could recognize slight differences in the temperature of test tubes. Although it might be suggested that these children are analgesic and distinguish between the point and end of a pin by means of tactile sensibility, Ford and Wilkins do not find it possible to accept this theory since patients with true analgesia, such as in syringomyelia, cannot make such a differentiation. They believe, therefore, that these patients do not have analgesia or loss of any type of sensibility but that they are merely indifferent to pain and that these facts do not necessarily indicate a true dissociation between pain of peripheral and of visceral origin. Furthermore, this unusual reaction cannot be considered due to mental defect nor, in the cases in question, does hysteria seem to offer an acceptable explanation. They are also unable to accept the explanation of certain psychoanalysts that insensitiveness to pain of this type may be the expression of a sadomasochistic personality. This indifference to pain, they believe, is apparently of congenital origin, for in all three cases the peculiar reaction of the children to injuries was discovered before they had reached the age of 3 years. In association with information obtained from the literature, therefore, Ford and Wilkins are inclined to believe that these cases represent a congenitally defective development in the sensory system which involves selectively the pain mechanisms and is comparable to congenital color blindness and similar conditions.

1. Ford, F. R., and Wilkins, Lawson: Congenital Universal Insensitiveness to Pain, *Bull. Johns Hopkins Hosp.* 62: 448 (April) 1938.



# ORGANIZATION SECTION

## PROCEEDINGS OF THE SPECIAL SESSION

MINUTES OF THE SPECIAL SESSION OF THE HOUSE OF DELEGATES OF THE  
AMERICAN MEDICAL ASSOCIATION, HELD AT CHICAGO, SEPTEMBER 16-17, 1938

### HOUSE OF DELEGATES

#### *First Meeting—Friday Morning, September 16*

The House of Delegates convened in the Red Lacquer Room of the Palmer House and was called to order at 10:25 a. m. by the Speaker, Dr. H. H. Shoulders.

#### Preliminary Report of Reference Committee on Credentials

The Speaker appointed the following Reference Committee on Credentials:

Deering G. Smith, Chairman.....	New Hampshire
Raymond L. Zech.....	Washington
James R. McVay.....	Missouri
William H. Myers.....	Georgia
William R. Molony Sr.....	California

Dr. Deering G. Smith, Chairman, stated that one hundred delegates had filed proper credentials.

He moved the approval of seating regularly elected delegates who had been unable to be present at San Francisco but whose alternate delegates had attended that session and of seating alternate delegates with proper credentials in place of regularly elected delegates who had been present at the San Francisco session but who were not present at this session. The motion was seconded by Dr. A. T. McCormack, Kentucky, and carried.

On motions of Dr. Smith, duly seconded and carried, the following physicians were seated as delegates in place of delegates who served at the San Francisco session: Dr. W. W. King, Colorado, in place of Dr. John W. Ames, Colorado, and Dr. John Andrew, Colorado, in place of Dr. Harold T. Low, Colorado.

It was moved by Dr. Smith, seconded by Dr. H. B. Everett, Tennessee, and carried, that the delegates thus far seated constitute the roll of the House.

#### Call for the Special Session

The Secretary read the following call for the Special Session of the House of Delegates, which he stated had been sent to each member of the House of Delegates of the San Francisco Session 1938, in accordance with the specific provisions of the By-Laws:

*To the Members of the House of Delegates of the American Medical Association:*

In compliance with the official request of members of the Board of Trustees that the House of Delegates be convened in special session, I, as Speaker, under authority of chapter III, section 2, of the By-Laws hereby officially call the House of Delegates of the American Medical Association to convene in special session in the city of Chicago, state of Illinois, at 10 a. m., daylight saving time, on the 16th day of September 1938.

The business to be transacted at this special session shall be limited to the consideration of the national health program submitted to the National Health Conference recently held in Washington and to such other matters as may be submitted to the House of Delegates by the Board of Trustees.

The House shall remain in session, recessing from day to day, until its deliberations are concluded.

This call is issued August 26, 1938.

H. H. SHOULDERS, M.D.,  
Speaker, House of Delegates,  
American Medical Association.

#### Representatives of National Medical Association

The Vice Speaker, Dr. R. W. Fouts, took the Chair.

The Secretary stated that Drs. Roscoe C. Giles, Clarence H. Payne and Carl G. Roberts, all of Chicago, were accredited representatives of the National Medical Association, a national organization of colored physicians, dentists and pharmacists in the United States, to confer with the House of Delegates and with officers and members of the American Medical Association at this special session; that these physicians had appeared before the Board of Trustees at its meeting on September 15, and that he had promised to let them know whether the House of Delegates would permit them to sit in as observers during the session.

It was moved by Dr. A. T. McCormack, Kentucky, seconded by Dr. George W. Kosmak, New York, and carried after discussion, that Drs. Giles, Payne and Roberts be invited to attend the meetings of the special session of the House of Delegates as observers and that they be permitted to address the House on request of the Speaker.

#### Address of the Speaker, Dr. H. H. Shoulders

The Speaker, Dr. H. H. Shoulders, read his address, which was referred to the Reference Committee on Reports of Officers and Board of Trustees.

#### *Members of the House of Delegates:*

It is customary for the House of Delegates to hear an address by the Speaker of the House, the President and the President-Elect. That precedent will not be broken in this extraordinary session unless there is objection.

As your new Speaker, presiding for the first time under these extraordinary conditions, I wish to request the display of an attitude of tolerance on the part of the membership toward my shortcomings.

It may be appropriate to draw attention to this gavel. It was made from wood grown at the Hermitage home of Andrew Jackson. It was presented to me by the medical profession of Nashville, Tenn. There is a legend to the effect that it endows the recipient with some of the attributes of Old Hickory. You will remember that he used a gavel and a gun with equal facility and effectiveness when the proper occasion arose.

As I said to the House last June, my conception of this House of Delegates is that it is the only representative group of medical men in the United States in position to speak for the whole profession of medicine and every point of view within the profession. This is the forum to which every medical problem may be brought with the full assurance that it will receive consideration.

Doubtless each member of the House has an opinion and maybe a conviction on each of the various issues which may be considered at this session of the House. It is reasonable to expect these opinions to conflict to some extent when we think of the wide variations in the local problems presented in the various communities throughout the country.

It is my observation that the House has always displayed an attitude of tolerance toward those who hold views contrary to our own. We have displayed something of the sentiment expressed by Voltaire, "I wholly disapprove of what you say but will defend with my life your right to say it."

The display of such a spirit on this occasion will contribute much toward the end that the actions taken by the House on the issues presented will deserve and receive the respect of the profession and the public of the United States.

I have participated with you in the deliberations of this House for a number of years. We are all familiar with the fact that a campaign has been going on for a number of years to create sentiment in favor of some radical changes in medical practice. At times this campaign has had the appearance of a "smearing" campaign. Our attitude and our motives have in many instances been misunderstood or maligned.

This House of Delegates is the policy making body of the Association. All the policies of this Association are our responsibility. We could not now, if we wished, dodge a responsibility to the profession of medicine as a whole and to the sick people of the United States. The executive officers of the Association could do no less than support these policies with vigor on all occasions.

In 1936 the campaign for some radical changes in medical practice began to take on a more definite form. An article published in the *Forum* and *Century Magazine* entitled "Medicine's Horse and Buggy" said, among other things: Today, with Thomas Parran Jr. as surgeon general and Josephine Roche as the Treasury Department's secretary for health, we may confidently expect continued pressure both from within and from without the government toward the reorganization of the health services. The accuracy of that prediction became apparent as time went on.

A little over a year later (October 1937) Miss Josephine Roche made an address before a special session of the American Public Health Association entitled "Medical Care as a Public Health Function." This address served to indicate very definitely the direction in which the radical change is to take place if she and her collaborators prescribe the form of change. In effect, she proposed that individual medical care become a function of health departments.

You, of course, are familiar with the report of the Interdepartmental Committee, which was released last February and which was designed to show deficiencies in medical care but none of its efficiencies. Finally the climax of this series of events was reached in July of 1938, when the proposals of the Interdepartmental Committee were submitted to the Health Conference at Washington.

This House of Delegates has never displayed an attitude of opposition to study and experimentation with plans for the financing of medical care by individuals or by the government. To the contrary, the House adopted principles, ten in number, to which all plans should conform. This action was not in opposition to plans and proposals. They were adopted because we believe they are essential to good medical care. We have opposed the adoption and operation of plans which do not conform to those principles.

Any one who reads these ten principles fairly will recognize the fact that they were written in the interest of patients, not in the interest of doctors. They were adopted in the interest of preserving a high order of ethical principles in the delivery of medical care to sick people under any and all plans. They were intended to restrain those who might allow their greed to ensnare them into the adoption of principles in conflict with them.

We have never taken action in opposition to government aid to the needy, whether the need was for food, clothing, shelter or medical attention.

We have opposed the administration of these benefits, and especially medical benefits, on a basis that would do violence to our whole idea of democracy.

We have opposed legislation which would have the effect of vesting in some governmental agency the power to enforce its decrees on patients and doctors.

We have never opposed provisions in any regulation or statute to protect the government and taxpayers against fraud on the part of any one.

We have been mindful of a philosophy we learned early in our professional career, to the effect that "everything that is potent for good is also potent for evil." It applies to morphine, to ether and to surgical procedures; in fact, it applies to every therapeutic measure at our command. We recognize also that the same philosophy applies with equal aptness to legislative proposals aimed at some political sociologic or economic ill.

This House of Delegates has not assumed to answer for the taxpayers of the United States the question as to whether or

not they wish to assume the financial burden of financing the complete and adequate medical care of all indigent persons as a governmental function. Nor should we assume the responsibility for answering that question now. The answer rests with the people of this country. If they should answer it in the affirmative, it will be our duty to accept the responsibility for drafting the plans. We can do no less. Our training and experience would not allow us to shirk such a responsibility even if we were so disposed.

Our knowledge of this question of medical care is the product of long years of effort and experience at the bedside of the afflicted and at the operating table. It is not limited to a knowledge gained from a brief study of a few statistical tables of doubtful accuracy. We are, and always have been, mindful of life. We are mindful also of the attributes which give flavor and purpose to living.

We remember the fact that human nature is just about the same as it was two thousand years ago. It has the same virtues and faults; the same generosity and the same greed; the same loves and hates; the same hopes and the same fears.

Our vision must see through all these conflicting attributes of human nature and with thoughts tempered with a high sense of justice and charity find a way that will lead us out of these troubled times to happier days.

#### Address of President Irvin Abell

The Speaker resumed the Chair and presented the President, Dr. Irvin Abell, Louisville, Ky., who delivered the following address, which was referred to the Reference Committee on Reports of Officers and Board of Trustees:

*Mr. Speaker and Members of the House of Delegates:*

Article 2 of the Constitution of the American Medical Association reads as follows:

The objects of the Association are to promote the science and art of medicine and the betterment of public health.

Section I, Chapter I, of the Principles of Medical Ethics reads as follows:

A profession has for its prime object the service it can render to humanity: reward or financial gain should be a subordinate consideration. The practice of medicine is a profession. In choosing this profession, an individual assumes an obligation to conduct himself in accord with its ideals.

In these times of changing trends in social thought it is still well to adhere to those age-old principles as guiding lights in our efforts to furnish the American people with the best medical service obtainable. At the time of their adoption, the form of society as a whole was comparatively a simple one; its evolution through the years has developed it into an exceedingly complex organization, involving changes in character of practice and in distribution of service. During these years the medical profession has sought constantly to advance its standards in every direction that promotes efficiency and operates for the increased welfare of the people we serve. Drastic changes have been made in medical education, affording assurance that the graduate of today is competent and efficient; hospitals have been improved, insuring dispensation of service compatible with modern medical knowledge; the fields of specialization have been clarified and special training delineated for those desiring to register therein. The responsibility for the advancement of medical lore rests solely on the profession; its chief capital investment is represented by the constantly accumulating body of knowledge stored in the minds, ideals, traditions and publications of its members, which is shared freely with the public through universities, journals, discussions, the public press, radio and individual consultations. This capital cannot be monopolized for profit; it does not fit into the capitalistic concept of economics, yet it is the most valuable asset we possess. The principles of ethics by which we have been governed since the organization of the American Medical Association have been criticized as being obsolescent and antiquated. It is readily admitted that its underlying principles are ancient, but it is submitted that they are the only ones, whether in the ethics and economics of medicine or industry, that have stood the test of time. The medical profession by principle and tradition is committed to the idea that the prime object, the

standard of value and the social reason for its existence are all one thing—the service it can render humanity. That service is further interpreted as the maintenance of health and the postponement of death. Whatever plan is proposed with regard to medical care is automatically tested and accepted or rejected by the profession in relation to its influence on the morbidity and mortality of the community or communities affected.

I beg your indulgence in thus briefly reviewing some of the fundamental, altruistic principles of the American Medical Association before proceeding to the matters pertinent to this special session of the House of Delegates.

#### PURPOSE OF THE SPECIAL SESSION

Following the passage of the Social Security Act, the President appointed an interdepartmental committee to coordinate health and welfare activities in order that the full benefits of the federal program under the act's provision may reach with minimum delay and maximum effectiveness the women, men and children for whose purpose the program was brought into existence. As you are aware, Miss Josephine Roche, chairman of this committee, announced in May 1938 that a conference would be called in Washington to consider a national health program which had been developed by a subcommittee known as the Technical Committee on Medical Care. Miss Roche was invited to attend the annual session of the House of Delegates held in San Francisco in June but found it impossible to do so. You heard her message, which was read to the House of Delegates and which is incorporated in the proceedings of the San Francisco session.

In accordance with the instruction of the House of Delegates, some of the members and officers of the Association attended the National Health Conference and had opportunity to express your point of view. Those in attendance included your president, Dr. Irvin Abell of Louisville, Ky.; your Secretary, Dr. Olin West; the chairman of the Committee on Medical Care, Dr. William F. Braasch of Rochester, Minn.; the chairman of the Committee on Scientific Assembly, Dr. James E. Paullin; the chairman of the Council on Industrial Health, Dr. Stanley J. Seeger; the Chairman of the Board of Trustees, Dr. Arthur W. Booth; the Editor of THE JOURNAL, Dr. Morris Fishbein, and several presidents and secretaries of state societies. The newspapers and periodicals have reflected to some extent the attitudes of those who were in attendance at that conference. The members included physicians and representatives of correlated professions, who were in a distinct minority; numbers of representatives of labor organizations, mutual aid and welfare organizations, farm bureaus and federations, publicists chiefly associated with liberal and radical periodicals, leading workers in the field of the hospital and of hospital insurance organizations, and governmental employees.

The Board of Trustees will no doubt present to you an outline of the National Health Program which was presented to the National Health Conference. It is for you to consider the various aspects of this program and to determine to what extent the American Medical Association shall endorse or oppose the various phases of the plans proposed. Bear in mind that the National Health Conference did not itself come to any definite conclusions. The program was set forth and largely supported by representatives of various governmental departments. Many of the lay members in attendance gave unqualified endorsement to the program as a whole or in part. Representatives of the American Medical Association, however, were unanimous in stating that they had no authority to take action on any part of the program or on the program as a whole; rather, that this was a function of the House of Delegates, the representative body of the American Medical Association, and that at a later date this program would be submitted to the House for its consideration.

During the National Health Conference no attempt was made to elicit, nor was opportunity given for, the presentation of alternative programs or for detailed discussion of all or any part of the program. If there was any single proposal on which all of those present seemed to be in agreement, it concerned the demand for a cabinet position on health and medical service under which all of the health and medical services of the government might be united. As our govern-

ment is now constituted, appropriations to put into effect various parts of the program may affect legislation involving half a dozen or more federal bureaus.

#### NEED FOR WIDER DISSEMINATION OF ACCOMPLISHMENTS

The medical profession of the United States faces a situation which is unique. Without calling the organized medical profession, or any considerable representation among those engaged in practice, into conference, a vast plan affecting health and medical care has been proposed to the people. In the forwarding of this plan, forces of propaganda have apparently made a studied effort to indicate that the American Medical Association opposes all change and that it is essentially a stand-pat organization. There would seem to be need at this time for a wider dissemination of the truth as to what has been accomplished by the American Medical Association for the people of this country and as to its true attitude toward the changes that are occurring in and that are being proposed for the medical care of our people.

#### POLICIES OF THE AMERICAN MEDICAL ASSOCIATION

The American Medical Association has constantly recognized the need for continued expansion of preventive medicine and a wider use of medical care. It has, however, at the same time been greatly concerned with the methods of administering both preventive medicine and medical care and with the ultimate effect of various changes on the morale as well as on the health of our people. The charge which is sometimes made, and which was made by radical speakers during the Health Conference, that physicians oppose changes because of a desire for more and more money, is an outrageous misstatement of our attitude. It is a fundamental tenet of the American Medical Association that the poverty of a patient should demand the gratuitous services of a physician; but endowed institutions and organizations for mutual benefit or for accident, sickness and life insurance or for analogous purposes have no claim on physicians for unremunerated services. As a professional man the individual physician has a right to determine the conditions of his service.

It is a fundamental tenet of the American Medical Association that it is unprofessional for a physician to dispose of his services under conditions that make it impossible for him to render adequate service to his patient, because to do this would be detrimental to the public. It is established as a principle of our organization that it is unprofessional for a physician to dispose of his professional attainments or service to any lay body, organization or group or individual, by whatever name or however organized, under terms or conditions which permit a direct profit from the fees, salary or compensation received to accrue to the lay body or individual employing him. Such a procedure has been established as beneath the dignity of professional practice, as unfair competition with the profession at large, as harmful alike to the profession and the welfare of the public and as against sound public policy.

#### EXPERIMENTATION WITH NEW FORMS OF PRACTICE

Within these fundamental tenets, experimentation in new forms of medical practice has not been inhibited. Hundreds of experiments have been carried on in the past and are now being carried on under the auspices of medical societies which are component parts of this organization, planned distinctly with a view to securing a wider distribution of medical service and to making more and more medical care available to a greater number of people. Thus the American Medical Association has never opposed the principle of group hospital insurance, notwithstanding repeated attempts by those who would place the Association at a disadvantage in asserting that this House of Delegates has opposed this principle. The American Medical Association, through its component societies, has frequently given aid to the development of group hospital insurance, asking only proper safeguards for the patient and for his physician in the development of such plans.

#### CARE OF THE INDIGENT

The Association has never opposed suitable care by municipal, county, state or other governmental agencies for the indigent or for those on the borderline of indigence. It has

urged state, county and other medical societies to develop "the most accurate and complete information that will enable them to maintain continuous medical care that is sufficient in amount and satisfactory in quality."

#### STATE INTERFERENCE WITH MEDICAL PRACTICE

The Association has constantly opposed the adoption of any form of state medicine by any definition of that term and it has refused to endorse vague plans that would make the care of the indigent and of those on the borderline of indigence, or those well able to pay, a burden on the workers of this country. The American Medical Association has never opposed suitable participation by the government through any of its agencies in preventive medicine or in any legitimate function of government in relationship to the care of the sick. By and with the aid of local, county, state and national medical organizations, the United States Public Health Service has been enabled to carry out far reaching plans for the control of venereal disease, of pneumonia and of cancer, for the expansion of personal and public hygiene and for the prevention of infections. Without such participation these accomplishments would never have been attained.

#### MEDICINE NOT IN POLITICS

The American Medical Association and its constituent bodies have constantly opposed any attempts on the part of local, county, state or federal governments to make medical care a political issue. American medicine fears political bureaucracies. It fears the acceptance of European models which have been set up by various so-called philanthropic foundations in an attempt to socialize medical practice in this country. The medical profession of this country wishes to keep the practice of medicine within the medical profession. It does not conceive that any political agency can do the job with one-tenth the efficiency at ten times the cost.

#### THE PRINCIPLE OF INSURANCE

The American Medical Association has never opposed the principle of insurance. An organization such as ours is in itself of the nature of a cooperative group in which individuals have banded together and by their individual contributions have made possible great accomplishments which individually they could not have attained. It is not the principle of insurance that is opposed by American medicine. The principle which we do oppose is political administration and manipulation of the insurance organization, devotion of a considerable portion of the funds thus derived to the payment of great numbers of employees not directly concerned with the service but intimately concerned with the maintenance of a political organization, and expansion of such organizations to wield greater and greater power in the affairs of the nation.

The American Medical Association has not opposed insurance against the costs of sickness, of disability, of unemployment, of old age or of death. It does oppose any interference by any outside agency—commercial, governmental or otherwise—into the relationship between doctor and patient which is fundamental in good medical care.

#### PERSONAL RELATIONSHIP BETWEEN DOCTOR AND PATIENT

We have recently heard the statement that the worth of this relationship is a fancied one; yet it possesses reciprocal qualities that inure to its value both to the physician and to the patient. With the realization by the physician that the patient in selecting him for personal service has demonstrated a confidence in his ability and integrity comes a determination to justify such trust by giving service to the best of his ability. The family physician knows the ancestry and heredity of the patient, is familiar with his temperament, the conditions under which he lives and his financial and emotional worries, and has a sympathetic attitude toward his problems—collective knowledge that has a definite value in carrying one through the crises of illness and in thwarting or minimizing the encroachment of disease.

In the National Health Conference a number of speakers who participated drew a picture of the American people in which perspective was largely lost. They showed us not only as a nation in which one third of the people are ill fed,

ill housed and ill cared for in sickness, but a nation with numbers of people suffering agonies because unable to purchase medical care, unwilling to consult a physician for fear of the costs of such consultation, and dying because of lack of medical care. The presentation of this perspective without suitable correction was unfair not only to the medical profession but also to the people of this country.

There is need for far more factual knowledge than is thus far available. An attempt to secure such factual knowledge is being undertaken by the American Medical Association as a part of its nationwide survey of medical care. The reports of some of the counties already published in *THE JOURNAL* indicate that it is possible to make this survey an accurate picture of the status of medicine in every portion of the country. Without such a picture it is impossible for any agency to develop suitable scientific legislation to meet the actual needs that exist.

It is proposed that at the next convening of the Congress of the United States legislation will be introduced to put into effect the proposals involved in the national health program. It is a function of this House of Delegates to consider carefully the proposals that are made so that your representatives, your elected and employed officers, may carry into effect your point of view and bring that point of view suitably to the elected representatives of the people.

#### HOUSE OF DELEGATES SPEAKS FOR PROFESSION

Only this body speaks for the American medical profession as a whole. It is no secret that there has been an attempt in various places to lead the American people to believe that the American Medical Association is not representative of the American medical profession, that it is a weakened, disrupted and failing organization. The actual fact is that the Association speaks today with the greatest membership in its history. During the year 1937-1938 it gained more than 4,000 members, reaching a total of 110,000 in its membership.

When your decision is made during this special session of the House of Delegates, it will be broadcast by the press and by your own organs of expression to the people and the medical profession in this country. The principles and policies which we have thus far established do not forbid, nor have they ever contemplated, any opposition to a well considered, expanded program of medical service when the need can be established. Neither is there any fundamental principle or policy which in any manner opposes aid to the indigent or the medically indigent if their indigence can be established. The principles and policies which this House of Delegates has adopted in the past have been developed with the single purpose of maintaining the quality and standards of medical care. To these high ideals I would urge you again to adhere. I would urge you also to consider seriously the obligation which rests on you, so that you may speak, when you do speak, with a united voice, and so that by and with your leadership the physicians of this country may also speak with a united voice in behalf of greater medical service and a greater medical profession.

#### Address of President-Elect Rock Sleyster

The Speaker presented the President-Elect, Dr. Rock Sleyster, Wauwatosa, Wis., who delivered the following address, which was referred to the Reference Committee on Reports of Officers and Board of Trustees:

For some years various groups have gradually been promulgating in our country an entirely artificial sentiment for the introduction into this country of foreign systems of medical care. This propaganda has been well financed, skillfully directed by professional promoters and carefully disguised in the name of "humanitarianism."

When our country followed others in a state of worldwide depression, a period of greatest prosperity ever known was followed by unemployment. A large part of our people who had failed to save for a rainy day found themselves in actual want. Others were forced to curtail and economize. Standards of living never before enjoyed by any people were lowered. Necessities became more difficult to attain, and many luxuries formerly enjoyed were impossible. Conditions have not improved. All of this has contributed to a state of mind

ready to seize any scheme promising greater social security. A people formerly independent have through want become susceptible to promises of a panacea, with little inclination to consider deliberately the price they will be forced to pay.

The proponents of these plans either fail to understand or deliberately fail to present the problem of medical care as merely a part of the picture as a whole. While we hear much of the "ill fed, the ill housed and the ill clothed," little, if anything, is said of these conditions as they relate to the creation of a medical problem. Physical needs as a contributing cause of illness get scant attention in the spotlight focused only on medical needs. The cart is put before the horse; the blame for unemployment is placed on illness instead of the blame for illness being placed on needs created by unemployment, in spite of the fact that millions in the ranks of the unemployed are physically well and unable to find work. Cause and effect are ignored and we are asked to concentrate on effects and to ignore causes.

The results of haphazard surveys of small sections of the population conducted by inexperienced relief workers are quoted as fact and are placed in the hands of admitted proponents of these schemes for interpretation and analysis. The results are presented as a new discovery. It is not stated that the medical problem is coexistent with the need of food, clothing, shelter, heat and light, and only a part of a whole. No credit is given to a profession which has given a million dollars a day in free service and which has rendered millions more at a cost far below its expense of delivery. What comparable record have the purveyors of other necessities of life to offer?

Whatever criticism may be aimed at the American Medical Association, the fact remains that the medical profession itself, voluntarily and from a sense of duty, is responsible for about everything "social" in the practice of the healing arts today. It would seem hardly necessary to enumerate to this group the social benefits to the people of this country which can be credited only to the medical profession. In the last half century no science has advanced as rapidly as medicine, and no benefits have been brought so promptly and unselfishly to the uses of the public as those given by the medical profession. We have been so engrossed in our work, however, that we have presumed that public opinion correctly evaluated these benefits and gave credit where credit was due.

Now cleverly prepared and financed propaganda is released to depict medicine as backward, selfish, conservative and indifferent to the public need. Now we are told that we have not done enough!

I am proud of the record we have made; I am proud of the men who make up this organization. They are the men who are caring for the great masses of our people. I am proud of men who are traveling lonely country roads at night, who are bringing babies into the world at daybreak, who are taking the responsibility of human life in their hands in the operating room, who are saving sick children, who are easing the pain of the aged and who are friend, counselor and father to their people. These are the men who make up the American Medical Association.

The meetings of this Association, faithfully attended, are given over primarily to a serious study for improving service to the sick. Hours and wages have never been subjects for discussion. Our resources are spent on educational endeavors so that our members may better serve. Our publications are devoted to the science of medicine so that all that is new may be brought to the bedside of the sick, even in the most remote districts. I challenge any one to find in the pages of our publications anything that reflects in any way a selfish interest. Our discoveries are given freely, promptly and without individual profit to humanity. Our services are given within the means of the receiver to pay. Our charities are unequalled in the history of the world. Our advance in self improvement and in scientific discovery has never been rivaled. The expectancy of life has been doubled, and plagues have been conquered. The world has been made a safer, better and happier place in which to live a life that has been lengthened through our efforts. Fraud and quackery have been exposed, and legislation protective to the people has been enacted. Education has been advanced, and hospital standards have been elevated. The people have been taught how to avoid illness. Research has

been encouraged and financed. The highest standards of ethics of any profession or trade that the world has ever known have been required of our members. Never at any time, in any way or in any place have our activities been motivated by a single selfish purpose. This is the organization of which I am proud; yet this is the organization which is accused of being backward, conservative, selfish and indifferent to human need.

Since the last meeting of this body, a National Health Conference, called by the Federal Interdepartmental Committee to Coordinate Health and Welfare Activities, was held at Washington on July 18-20. The proceedings of this meeting have been reported to you through *THE JOURNAL*. At this meeting a national health program was announced and definite proposals were made. You have been called in special session to consider them and to formulate the policies of this Association as it relates to them. Your officers and Board of Trustees will be charged with the responsibility of upholding these policies until you meet again. Representing the 110,000 members of this Association, your voice is the voice of American medicine. I have every confidence in the wisdom of such action as you will take.

In the consideration of these proposals we are motivated by but one thought. If enacted, what will each proposal contribute to the prevention of disease, to the prolongation of life and to the alleviation of suffering? At what cost will these things be accomplished; in other words, "What price glory"? To what will this effort lead? Are temporary advantages to be lost and offset by later disadvantages? These are questions that must be studied and weighed most carefully. To plans which will benefit the people we serve, we offer our wholehearted and unselfish support. That is our plain duty. It is equally our duty to oppose in every way at our command unsound doctrines which would eventually lower the standards of medical service to that found in other countries where the physician has been made subservient to political control.

American medicine has never stood still. We are deeply conscious of improvements to be made in the distribution of medical care. We have believed that no one plan can fit the needs of every section and that each community must be treated according to its needs and its local conditions. We have believed that no plan can be successful without the wholehearted cooperation of the medical profession and that government, if sincere, will recognize that fact. We have recognized one, and only one, great responsibility: that to the people of our country. We have offered our hearty cooperation in perfecting our service to them. We will not be a party to any plan which lowers the quality of service even to the poorest family. Maintaining our constant advance in the science of medicine, we are dedicated to a distribution of the highest possible type of service to the people at a cost they can afford to pay. The care of the sick must not be given over to commercial groups in open competitive bidding, each offering a little more for a little less. It must not be dominated by political control. In the development of any plan, it is our plain duty to the American people to see that the structure of medicine is not wrecked, for their future health and happiness depends on its constructive advance. It must not be destroyed.

In peace or in war, the medical profession has never failed the people of our country. It will not fail them now. Their needs are our needs, and they will be met as they have always been met by those who, through daily contact and care of the sick, know these needs better than any one else. Our record is an open book and we invite full comparison of unselfish and efficient public service with any other agency.

#### Statement of the Board of Trustees

Dr. Arthur W. Booth, Chairman, presented the following statement, which was referred to the Reference Committee on Reports of Officers and Board of Trustees:

For the third time in the history of the American Medical Association your Board of Trustees, in accordance with the power conferred on it by the By-Laws of the Association, has called you into a special session. On two previous occasions—once when our country was at war and the services of the American Medical Association were required to provide medical officers for our troops and physicians to aid in the work



of the selective service boards, and a second time when the Social Security Act was first proposed to the Congress—you were called into special session. The specific purposes for which you have been called on this occasion have been announced to you by the Speaker of the House of Delegates and by the Secretary of the Association.

Following the presentation of the statement of Miss Josephine Roche to the House of Delegates at the San Francisco session, the National Health Conference met in Washington, July 18, 19 and 20. From that conference there emanated, as you already know, a National Health Program developed by a technical committee, which, in turn, had been appointed by the Interdepartmental Committee to Coordinate Health and Welfare Activities appointed by the President of the United States. The National Health Conference was a meeting attended by representatives of labor and welfare agencies, medical organizations, social workers and other groups. The program which is now presented to you was presented to the National Health Conference by representatives of various governmental agencies responsible for the conference and by the Technical Committee that has been mentioned. Little opportunity was given for discussion by those in attendance on the Conference of the specific proposals that were made. The President of the Association, your Secretary, the Chairman of the Board of Trustees, the Editor of *THE JOURNAL*, the Chairman of your Committee on Medical Care, and the chairmen of your council on Scientific Assembly and that on Industrial Health, who were invited individually to participate in the Conference, all made clear to the Conference the fact that only the House of Delegates of the American Medical Association is empowered to establish policies and that only the House of Delegates may establish for the American Medical Association a policy relative to the various proposals that were made. In submitting these proposals to you the Board would point out that at the calling of the National Health Conference it was stipulated that no formal action would be taken by that Conference. Nevertheless, responsible representatives of the government have indicated that the proposals made would be embodied in legislation to be submitted to the Congress of the United States when next it meets.

For these reasons and particularly because the Congress of the United States will be convened before the House of Delegates will again meet in regular session, the Board of Trustees considered it advisable to request the Speaker to call this special session of the House of Delegates in order that your representatives may be able to present your point of view, as representative of the American medical profession, to the people and to the Congress of the United States and to take such other action as may be deemed necessary to make your views effective.

The Board of Trustees will not at this time read to the House of Delegates in detail the complete text of the proposals or even the abstract of the five chief proposals that have been made. These proposals concern briefly (1) expansion of public health service, (2) increase of hospital facilities, (3) medical care for the medically indigent, (4) a general program for medical care and (5) a program for compulsory sickness insurance covering the entire population of the United States.

These five proposals, it has been suggested, may well be submitted to five special reference committees of this House of Delegates, each of which will concern itself with the details of one of these five proposals and at the same time give consideration to such alternative proposals for meeting the same needs as may arise from the medical profession itself.

The complete text of the proposed National Health Program was published in *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* immediately after the conclusions of the National Health Conference and has thus been made available to the entire medical profession of the country. In order, however, that you may have this material immediately before you, there is now being given to each of you a copy of the complete text of the National Health Program to be used in your consideration of this subject.

In submitting these proposals to the National Health Conference the statement was made by various representatives of our government that it was not contemplated that this entire program would be made immediately effective but rather that there might over a term of approximately ten years be developed

such a program, according to the "blue prints" offered, so that expansion of medical and public health activities in the United States during the next ten years might follow the definite procedure here outlined. On you, therefore, rests a serious burden—the burden not only of planning for the immediate needs in the field of medical care in the United States but also of setting forth the policies and views of the medical profession in relationship to medical care and in relationship to this "blue print."

Your responsibility is great. The medical profession of the entire country awaits anxiously the answer that you will make. Recognizing the manner in which the House of Delegates has in the past accepted the obligation placed on it to represent the point of view of 110,000 American physicians, of whom you are the authorized representatives, we are confident that you will make your decisions calmly, carefully, and with the same sympathetic consideration for the needs of the people of this country that has characterized your actions in the past.

The results of your deliberations as expressed in this special session of the House of Delegates will be the guiding and determining voice for the medical profession on those whom you authorize to make your voice effective, until the House of Delegates may at some future time determine any other action.

#### INVESTIGATION BY THE DEPARTMENT OF JUSTICE

Shortly after the termination of the National Health Conference, an announcement was released to the newspapers and to the press of the United States indicating that the Department of Justice of the United States government proposed to seek an indictment of the American Medical Association as a monopoly, unless the American Medical Association, through its central organization or through its constituent society in the District of Columbia, consented to certain stipulations satisfactory to the Department of Justice in relationship to the nature of medical practice. An investigator from the Department of Justice has consulted some of the correspondence in the headquarters office of the American Medical Association. At no time has an official or unofficial communication ever been received from the Attorney General of the United States, Honer Cummings, or from his assistant, Thurman Arnold, or from any other representative of the Department of Justice. The Association knows of this matter otherwise only through the statements released to the press.

In response to numerous inquiries that have come to the officers of the Association and to the headquarters, the statement has been made repeatedly that the American Medical Association welcomes investigation by any authorized agency of the nature of its organization, of its methods of work, of the conduct of its affairs and of its activities, firmly reliant on the belief that every action taken by the Association has been in accordance with its constitutional organization in the interest of the public welfare, and for advancing the standards and quality of medical service for the American people; and that at no time has it violated the established law of the federal, state or municipal governments of this country. Moreover, by the very nature of its organization, it has observed constantly the democratic principles on which the government of the United States is founded and maintained.

#### SOCIAL SECURITY ACT

As this House of Delegates is aware, the American Medical Association is a federation of its constituent associations, established to promote the science and art of medicine and the betterment of public health. In accordance with the provision of the Social Security Act, an organization of this type is considered to be exempt from those stipulations of the act assessing taxation. According to the original ruling of a deputy commissioner of internal revenue, the American Medical Association has been until recently exempt from these provisions. It has indeed proposed to establish voluntarily a plan for the security of the employees of the Association, and this plan was approved by the House of Delegates at the San Francisco session. More recently special interpretation of the law has been made by another deputy commissioner whereby the American Medical Association, formerly classified with

educational and scientific groups, is now classified as a business league and required under the act to pay considerable tax covering all its employees. Your Board of Trustees, after careful consideration, has determined to appeal from this interpretation and accordingly has employed special counsel to undertake the handling of this appeal to restore the Association to its original and proper classification as a scientific and educational organization. The appeal made by your Board of Trustees is not an attempt to evade the requirements of any legislation enacted by the Congress of the United States. We have in the past conformed fully to every law, and it is our purpose that we shall continue to conform to the law if, as and when it may be established by the courts of the United States that the interpretation of the law by various governmental agencies is in accord with the opinion of the courts that this is the law.

In view of the exigencies of the present situation the Board of Trustees deems this not a suitable time to discuss at length the subject of public relations. It wishes to assure you that the subject has been given serious consideration and that steps have been taken to expand activities relating to this matter.

#### Representatives of American Dental Association

The Secretary announced the presence of four representatives of the American Dental Association, who, on request, arose and were recognized by the House.

#### Reference Committees

On motion of Dr. E. L. Henderson, Kentucky, seconded by Drs. H. B. Everett, Tennessee, and James E. Paullin, Section on Practice of Medicine, and carried, the suggestion of the Speaker was adopted, namely, that there be three general reference committees: one to consider reports of officers and Board of Trustees; a second to consider the main subject stated in the call, this committee to be composed of the chairmen of five subcommittees, and a third committee on miscellaneous business.

The Speaker presented the following names of members of reference committees:

#### CONSIDERATION OF THE NATIONAL HEALTH PROGRAM

Walter F. Donaldson, Chairman, Pennsylvania.  
Fred W. Rankin, Section on Surgery, General and Abdominal.  
H. A. Luce, Michigan.  
Walter E. Vest, West Virginia.  
Frederic E. Sondern, New York.

#### DIVISION 1 TO CONSIDER RECOMMENDATION No. 1 ON EXPANSION OF PUBLIC HEALTH SERVICES

Walter E. Vest, Chairman, West Virginia.  
A. A. Walker, Alabama.  
Ben R. McClellan, Ohio.  
James O. Graves, Louisiana.  
James R. McVay, Missouri.

#### DIVISION 2 TO CONSIDER RECOMMENDATION No. 2 ON EXPANSION OF HOSPITAL FACILITIES

H. A. Luce, Chairman, Michigan.  
Holman Taylor, Texas.  
George Blumer, Connecticut.  
Francis F. Borzell, Pennsylvania.  
J. C. Flippin, Virginia.

#### DIVISION 3 TO CONSIDER RECOMMENDATION No. 3 ON MEDICAL CARE FOR THE MEDICALLY NEDDY

Walter F. Donaldson, Chairman, Pennsylvania.  
E. H. Skinner, Section on Radiology.  
F. S. Crockett, Indiana.  
Fred Moore, Iowa.  
J. E. Paullin, Section on Practice of Medicine.

#### DIVISION 4 TO CONSIDER RECOMMENDATION No. 4 ON A GENERAL PROGRAM OF MEDICAL CARE

Fred W. Rankin, Section on Surgery, General and Abdominal.  
Richard H. Miller, Massachusetts.  
Grant C. Madill, New York.  
John H. Fitzgibbon, Oregon.  
H. L. Snyder, Kansas.

#### DIVISION 5 TO CONSIDER RECOMMENDATION No. 5 ON INSURANCE AGAINST LOSS OF WAGES DURING SICKNESS

Frederic E. Sondern, Chairman, New York.  
Charles J. Whalen, Illinois.  
Edward M. Pallette, California.  
Andrew F. McBride, New Jersey.  
Henry C. Macatee, District of Columbia.

#### REPORTS OF OFFICERS AND BOARD OF TRUSTEES

Terry M. Townsend, Chairman, New York.  
William F. Bransch, Minnesota.  
E. L. Henderson, Kentucky.  
Samuel P. Mengel, Pennsylvania.  
C. W. Roberts, Georgia.

#### MISCELLANEOUS BUSINESS

W. H. Seemann, Chairman, Louisiana.  
Charles B. Reed, Illinois.  
McLain Rogers, Oklahoma.  
H. G. Hamer, Indiana.  
Felix J. Underwood, Mississippi.

#### SERGEANTS AT ARMS

J. D. Brook, Michigan.  
Griffith E. Thomas, U. S. Navy.

#### Resolutions Recommending Conference to Formulate Working Agreement for Compensation for Medical Care

Dr. Burt R. Shurly, Section on Laryngology, Otology and Rhinology, presented the following resolutions, which were referred to Division 3 of the Reference Committee on Consideration of the National Health Program:

WHEREAS, At present doctors are engaged in a desperate struggle to resist the encroachments of socialized medicine and the enemy has already undermined the foundations of individualistic medicine; and

WHEREAS, More than 50 per cent of what was formerly paid practice has been absorbed by public free agencies, so that all we may hope to accomplish is to salvage the remaining 50 per cent to keep our self respect; and

WHEREAS, The physician has lived through many years of voluntary servitude with increasing financial demands and decreasing compensation, with growing competition from public medical and social agencies for which the doctor works with poor pay or none at all, such as free teaching, free clinics, free hospitals, industrial and insurance medical organizations, and ever growing activities of boards of health. These are unsatisfied with the police function in the control of contagious and infectious disease and the administration of health laws but now include pregnancy and diseases of the eye, ear, nose and throat in burcaueratic fashion taking over the actual practice of medicine; and

WHEREAS, We have listened to the siren voices of the Lorelei crew of welfare and social workers who have taken advantage of the altruistic and sentimental attitude we have developed through centuries of constant love for and contact with sick humanity. The elimination of disease on every forward march has been taken by and under the leadership of doctors, and it must remain so. The great army of doctors and specialists, with the doctor first and the specialist second, must be maintained in any plan adopted; and

WHEREAS, The cost of medical care has become a burden to the people and the profession and operating, x-ray and laboratory equipment has become essential to progressive medicine and surgery; be it

*Resolved*, That a conference be held between the Board of Trustees of the American Medical Association, the members of the Council on Medical Education and Hospitals, the executive committee of the American Hospital Association, the executive committee of the Advisory Board of Medical Specialties and the executive committee of the American College of Surgeons, together with the proper medical authorities of the U. S. government, to formulate a working agreement whereby the U. S. government will compensate the qualified medical profession and those on the staffs of all approved hospitals, dispensaries and laboratories for the medical care of those unable to pay for necessary service for proper diagnosis and treatment; and be it further

*Resolved*, That the approved hospitals, dispensaries and laboratories be given such subsidy and necessary financial aid as may be required, to meet the actual cost of medical care, that these indigent patients be returned to the family physician after hospital care, and that the doctor receive such compensation for office and bedside service as may be agreed on by the county medical society through the Board of Trustees of the American Medical Association and the medical authorities set up with the U. S. government; and be it further and finally

*Resolved*, That nothing in this resolution may be construed to imply that the receipt of any compensation from any source involves anything other than that the control and direction of expenditures shall be within organized medicine and under the advice and consent of the American Medical Association without dictatorship or bureaucracy.

A motion of Dr. Carl F. Vohs, Missouri, that the plans and proposals to be presented to the House be referred to committees by title and not read to the House was lost.

#### Resolutions on Distribution of Medical Care

Dr. Hilton S. Read, New Jersey, presented the following resolutions, which were referred to Division 3 of the Reference Committee on Consideration of the National Health Program:

WHEREAS, The art and science of medical care in the United States is held in universal esteem; and

WHEREAS, The distribution of said medical care and the cost thereof in the United States is under surveillance; and

WHEREAS, There are reasons to believe that said distribution may be in need of modification; therefore be it

*Resolved*, That this Association states as its belief that the care of the medically indigent is the dual responsibility of the physicians and government, who should jointly cut the pattern of such medical care; be it further

*Resolved*, That this Association approves the experimental approach in the provision of medical care being undertaken by component societies of

this Association as the proper approach to the solution of a geographically and economically complex problem; and be it further

*Resolved*, That this Association commends the continued considerate cooperation of all interested parties to a joint effort to solve this problem.

### Resolution Recommending Proposals for Financing Care of Indigent Sick

Dr. E. G. Wood, Tennessee, presented the following resolution, which was referred to Divisions 3 and 4, and any other divisions deeming it appropriate for their consideration, of the Reference Committee on Consideration of the National Health Program:

WHEREAS, The national health program as submitted to the National Health Conference by the Interdepartmental Committee and now before the House of Delegates of the American Medical Association for consideration contains provisions which do violence to the ethical principles that we regard as essential to good medical care; and

WHEREAS, A better understanding of our position on the questions involved in this issue may be conveyed to all concerned by making a positive proposal in which are embodied the principles we regard as essential to good medical care to indigent and nonindigent persons alike; therefore be it

*Resolved*, That the House of Delegates of the American Medical Association adopt the following proposals to the end that the American people may have a clear understanding of our position.

#### PROPOSALS

It is proposed that the Congress of the United States enact a statute in accord with the following principles:

##### I. MEDICAL INDIGENCE DEFINED AND CLASSIFIED

Indigence shall be defined, and those persons who are indigent within the definition of this act shall be classified as (a) completely indigent or (b) relatively indigent, in accordance with the following definition of the terms indigent and relatively indigent.

The word "indigent" as used in this act is meant to refer to (1) a person who has no resources and no income and (2) a person who has an income, in money or nonmoney or both, but whose income of all types and from all sources when judiciously expended for the necessities of life, such as food, clothing and shelter, leaves no residue with which to pay for medical care.

The term "relatively indigent" refers to persons with an income, in money or nonmoney or both, which when judiciously expended for the necessities of life leaves a residue which may be applied to the cost of medical care but which is too small in amount to cover the reasonable cost of hospital care, when needed, or the costs of medical care at home in case of a serious or prolonged illness.

The eligibility of a person or family to the benefits provided for the relatively indigent can be determined by the proper agency when the injury or illness arises.

##### II. CERTIFICATION AND REGISTRATION OF INDIGENTS

Each citizen who is at any time found to be indigent, or on application therefor or otherwise, shall be given a certificate identifying him and those dependent on him, under proper regulations to be determined by the administrative agency created by the act and reciting whether the holder is completely indigent or relatively indigent.

Such certification shall show the date of its issuance and expiration, and the administrative agency established by the act shall have the power, and be charged with the responsibility of, adopting and enforcing reasonable regulations for the prevention of fraudulent procurement or use thereof, including cancellation of any such certificate held by a person who is not in fact indigent or whose indigence is removed after issuance. Temporary certificates may be issued, renewable on evidence of continued indigence.

##### III. THE PAYMENT OF THE COST

Provision shall be made for the payment by the administrative agency of the cost of necessary medical care rendered to the holder of a certificate of indigence, or to his dependents listed and identified thereon, by any practitioner licensed to attend and prescribe for sick persons by the state in which the service is rendered, or by any hospital (including clinics and laboratories) approved by such attendant practitioner, under the following conditions and limitations:

1. The medical care to be so provided for the holder of a certificate of complete indigence and his dependents listed thereon shall include whatever may be necessary to effect restoration to health, such as treatment by his attendant practitioner in home or office, hospital care or laboratory service, with the end in view that all available resources and facilities for medical care may be made responsive to the needs of such persons.

2. The medical care to be so provided for the holder of a certificate of relative indigence and his dependents shall be limited to cases of illness or disability which are so prolonged or of such character as to require institutional care or some form of special or unusual treatment the expense of which is in excess of the financial ability of the certificate holder except by depriving him or his dependents of necessary food, clothing or housing.

##### CERTIFICATE COMPLETE AUTHORITY FOR COMPLETE CARE

3. The practitioner or hospital called on by the holder of a certificate of complete indigence for medical care for himself or dependents shall render all necessary and reasonable care which the condition of the patient requires without further authority from the agency, and the agency shall be liable for the reasonable cost thereof.

##### LIMITED CARE ON CONDITIONS

4. The practitioner or hospital called on by the holder of a certificate of relative indigence for medical care for himself or dependents shall promptly report the needs of the patient to the agency under rules to be prescribed, and the agency shall be liable for the cost thereof only when expressly authorized, provided that in emergency cases failure to obtain prior authority shall not avoid such liability in proper cases subsequently approved.

##### INSTITUTIONS FOR MENTAL DISORDERS NOT AFFECTED

5. Persons requiring permanent or prolonged confinement because of mental disorders shall continue to be the responsibility of local government subdivisions as now.

##### POWERS VESTED IN ADMINISTRATIVE AGENCY TO MAKE REGULATIONS

6. The administrative agency created by the act shall be authorized to adopt regulations requiring prompt reports of medical care rendered to any certificate holder for which compensation by the agency is expected, including report of diagnosis, number of calls made and anticipated, reasons for hospitalization, and any other pertinent facts which will enable the agency to determine the reasonableness of or the necessity for the care furnished, and such reports may be required during the progress of treatment. Such reports, which the agency shall cause to be communicated to the proper public health authorities, shall give special consideration to conditions rendering preventive precautions desirable in order to avoid recurrence or repetition of such illness or disability.

##### POWERS TO FIX SCHEDULE OF FEES

7. The administrative agency created by the act shall, after investigation, establish a schedule of fees which may be charged by practitioners or Institutions for medical care furnished to certificate holders or their dependents. This schedule may from time to time be changed, altered or modified in the discretion of the agency. It may classify fees according to the population of communities in which medical care is rendered or according to any other reasonable differential, local conditions always being considered.

##### POWERS TO REFUSE PAYMENT ON CONDITIONS

8. The administrative agency shall pay all reasonable fees submitted by practitioners or hospitals for medical care rendered to certificate holders and their dependents within the schedule adopted by the agency, provided that no such fee shall be paid for services found by the agency to have been unnecessary or unreasonable or which may have been rendered after notice from the agency that no further medical care is needed or efficacious in a particular case or when required reports have been wilfully omitted.

The decision of the agency that fees submitted by a practitioner or hospital shall not be paid because of failure to comply with its regulations for reports or because of the agency's determination that the services for which the fees are rendered were unnecessary or unreasonable shall be final and conclusive and not subject to review except for arbitrariness, illegality or contumacy on the part of the agency's officers or agents.

9. The administrative agency shall be expressly authorized and directed:

(a) To investigate, through a competent medical authority, the adequacy of the medical care of certificate holders and their dependents; to consult on cases when called on by attendant practitioners or on initiative of its medical officers when they have reason to believe that inadequate care is being furnished, and to refer a patient to a diagnostic center for study when the diagnosis is obscure or there is difference of medical opinion thereon and when the patient consents to such reference.

(b) To investigate conditions of fraud on the part of practitioners, hospitals or certificate holders when there is reasonable cause therefor, as in the case in suspected malingering or unnecessary or excessive visits or treatments.

(c) To report to the proper state licensing or prosecuting authorities and to any local professional association any cases of unethical or illegal practices or conduct on the part of practitioners or hospitals in the care of certificate holders which in any way may be brought to the attention of the agency.

##### IV. PROVIDING APPOINTMENT OF NATIONAL BOARD

The act shall be administered by a National Board of Medical Care consisting of thirteen members appointed by the President. Two members of such board shall represent the opinion of social service workers, three members the opinion of the medical profession, one member the opinion of hospital administration and seven members the opinion of the taxpayer and patient.

Such Board shall, through as many state, sectional or district and local boards as may be necessary, proceed to determine, register and certify the indigent citizens who may be entitled to the benefits of the act and shall supervise and direct the activity of all such subordinate boards in such manner as it may provide. Such supervision and direction, under regulations adopted by the Board, may be delegated to a national director of medical care, appointed by the Board, who shall devote his full time to such duties.

##### PROVIDING FOR THE CREATION OF EXECUTIVE UNDER NATIONAL BOARD

The National Board shall hold meetings at stated intervals and shall be paid a per diem and expense. Extraordinary meetings will be held on the call of the Director. The schedule of fees and all policies of administration shall be determined and fixed by the National Board. This Board will also determine what state, sectional and local boards are necessary, appoint them, determine their duties and authorize the appointments of medical and administrative officers and employees.

Full time county health departments as constituted at present, when possible, should be designated the local administrative agency for the area over which the department has jurisdiction.

In localities where full time health departments do not exist, in a county or group of counties, steps should be taken to create such an administrative agency for the proper area.

## Resolutions on Public Announcement of Plans Recommended by House of Delegates

Dr. George L. Laverty, Pennsylvania, presented the following resolutions, which were referred to the Reference Committee on Miscellaneous Business:

WHEREAS, The Social Security Act of Congress made possible the creation of an Interdepartmental Committee to Coordinate Health and Welfare Activities; and

WHEREAS, The Chairman of said Interdepartmental Committee convened a session known as the National Health Conference; and

WHEREAS, Various proposals there discussed are economically extravagant, sociologically impracticable, scientifically stifling and professionally deteriorating; and

WHEREAS, The President of these United States did publicly proclaim that a "coordinated national program of action" is imperative; be it

Resolved, That the Dauphin County Medical Society, through the duly constituted Medical Society of the State of Pennsylvania, does hereby petition the American Medical Association

(a) To announce, publish, proclaim and promulgate by commercial radio, press release, paid advertisement and public acclaim such specific methods and measures as its duly constituted officers and its House of Delegates recommend as practicable and expedient, within scientific and economic limits, in the prevention of illness, and the conservation of the health of the citizens of the nation, and

(b) To combat, oppose, contradict and amend, by the same means, such idealistic, fanciful, impracticable and extravagant schemes as will redound eventually to encourage malingering, stifle initiative, retard progress and disrupt the traditional physician-patient relationship; and be it further

Resolved, That the proper representatives of the American Medical Association be empowered also to accept voluntary contributions from individuals and organizations, lay and professional, who may choose to assist in underwriting the expense incident to this proposed effort.

## Report of Reference Committee on Credentials

Dr. Deering G. Smith, Chairman, reported that 153 delegates had registered, and recommended that Drs. James C. Sargent and Stephen E. Gavin be seated as delegates from Wisconsin.

The report of the reference committee was adopted on motion of Dr. Smith, seconded by Dr. E. G. Wood, Tennessee, and carried.

## Proposed Substitute for Title VI of the Social Security Act

Dr. Arthur T. McCormack, Kentucky, presented the following proposed substitute for Title VI of the Social Security Act, which was referred to the divisions of the Reference Committee on Consideration of the National Health Program deeming it appropriate for their consideration:

### TITLE VI

#### PUBLIC HEALTH WORK

Section 601-A. For the purpose of assisting states, counties, health districts and other political subdivisions of states in establishing and maintaining adequate public health services, including the training of personnel for local and public health work, there is authorized to be appropriated for the fiscal year ending June 30, 1940, the sum of \$15,000,000.00; and for the fiscal year ending June 30, 1941, the sum of \$20,000,000.00; and for the fiscal year ending June 30, 1942, the sum of \$30,000,000.00; and for the fiscal year ending June 30, 1943, the sum of \$40,000,000.00; and for the fiscal year ending June 30, 1944, the sum of \$50,000,000.00; and thereafter for each fiscal year such amounts as may be found necessary, not exceeding in any fiscal year \$100,000,000.00, to be used as hereinafter provided.

B. For the purpose of assisting States, counties, legally established districts and other political subdivisions of States, in establishing and maintaining medical care for the medically needy, including the training of personnel for such purposes, there is authorized to be appropriated for the fiscal year ending June 30, 1939, the sum of \$50,000,000.00; for the fiscal year ending June 30, 1940, the sum of \$75,000,000.00; for the fiscal year ending June 30, 1941, the sum of \$100,000,000.00; and for each fiscal year thereafter such sums as may be found necessary but not exceeding in any fiscal year \$200,000,000.00, to be used as hereinafter provided.

C. For the purpose of assisting States, counties, health districts and other political subdivisions of the States in the construction of additional hospital facilities, including health centers, for the medically needy, especially in rural areas, there is hereby authorized to be appropriated for the fiscal year ending June 30, 1939, the sum of \$25,000,000.00; for the fiscal year ending June 30, 1940, the sum of \$25,000,000.00, and for each of the ten years thereafter, the sum of \$50,000,000.00.

#### STATE AND LOCAL PUBLIC HEALTH SERVICES

Section 602-A. a. The Surgeon General of the Public Health Service, with the approval of the Secretary of the Treasury, shall, at the beginning of each fiscal year, allot to the States the total of (1) the amount appropriated for such year pursuant to section 601-a; and (2) the amounts of the allotments under this section for the preceding fiscal year remaining unpaid to the States at the end of such fiscal year. The amounts of such allotments shall be determined on the basis of (1) the population; (2) the

special health problems, including the strengthening of public health organization, the eradication of tuberculosis, venereal diseases and malaria, the control of mortality from pneumonia and cancer, mental hygiene and industrial hygiene; and (3) the financial needs of the respective States. On making such allotments the Surgeon General of the Public Health Service shall certify the amounts thereof to the Secretary of the Treasury.

b. The amount of an allotment to any State under subsection a for any fiscal year, remaining unpaid at the end of such fiscal year, shall be available for allotment to States under subsection o for the succeeding fiscal year, in addition to the amount appropriated for such year.

c. Prior to the beginning of each quarter of the fiscal year, the Surgeon General of the Public Health Service shall, with the approval of the Secretary of the Treasury, determine in accordance with rules and regulations previously prescribed by such Surgeon General after consultation with a conference of the State and Territorial health authorities, the amount to be paid to each State for such quarter from the allotment to such State, and shall certify the amount so determined to the Secretary of the Treasury. On receipt of such certification, the Secretary of the Treasury shall, through the Division of Disbursement of the Treasury Department and prior to audit or settlement by the General Accounting Office, pay in accordance with such certification.

d. The moneys so paid to any State shall be expended solely in carrying out the purposes specified in section 601-a, and in accordance with plans presented by the health authority of such State and approved by the Surgeon General of the Public Health Service.

B. a. The Surgeon General of the Public Health Service, with the approval of the Secretary of the Treasury, shall, at the beginning of each fiscal year, allot to the States the total of (1) the amount appropriated for each year pursuant to section 601-b; and (2) the amounts of the allotments under this section for the preceding fiscal year remaining unpaid to the States at the end of such fiscal year. No allotment shall be paid to any State under this section until it has provided in its State health authority, a bureau or agency for the medical care of the medically needy and that the director of such bureau or agency shall have been a legally qualified physician under the laws of such State for at least five years and shall have such other qualifications as may be provided in the regulations authorized hereunder; and (2) the amounts of the allotments under this section for the preceding fiscal year remaining unpaid to the States at the end of such fiscal year. The amounts of such allotments shall be determined on the basis of (1) the population; (2) the special problems of medical need; and (3) the financial needs of the respective States. On making such allotments the Surgeon General of the Public Health Service shall certify the amounts thereof to the Secretary of the Treasury.

b. The amount of an allotment to any State under section a for any fiscal year, remaining unpaid at the end of such fiscal year, shall be available for allotment to States under subsection a for the succeeding fiscal year, in addition to the amount appropriated for such year.

c. Prior to the beginning of each quarter of the fiscal year, the Surgeon General of the Public Health Service shall, with the approval of the Secretary of the Treasury, determine in accordance with rules and regulations previously prescribed by such Surgeon General after consultation with a conference of the State and Territorial health authorities together with the directors of the bureaus of medical service, hereinafter provided, the amount to be paid to each State for such quarter from the allotment to such State and shall certify the amount so determined to the Secretary of the Treasury.

d. The moneys so paid to any State shall be expended solely in carrying out the purposes specified in section 601-B and in accordance with plans presented by the health authority and director of medical service of such State, after consultation with representatives selected by the medical profession and approved by the Surgeon General of the Public Health Service.

C. o. The Surgeon General of the Public Health Service, with the approval of the Secretary of the Treasury, shall, at the beginning of each fiscal year for ten years, allot to the States the total of (1) the amount appropriated for such year pursuant to section 601-C and (2) the amounts of the allotments under this section for the preceding fiscal year remaining unpaid to the States at the end of such fiscal year. The amounts of such allotments shall be determined on the basis of the need of the States, counties, health districts and other political subdivisions of the States for general special hospitals for the care of cases suffering from tuberculosis or mental diseases or for diagnostic centers; (2) the financial needs; of the respective States. On making such allotments the Surgeon General of the Public Health Service, shall certify the amounts thereof to the Secretary of the Treasury.

b. The amount of an allotment to any State under subsection a for any fiscal year, remaining unpaid at the end of such fiscal year, shall be available for allotment to States under subsection o for the succeeding year, in addition to the amount appropriated for such year.

c. Prior to the beginning of each quarter of the fiscal year, the Surgeon General of the Public Health Service shall, with the approval of the Secretary of the Treasury, determine in accordance with rules and regulations previously prescribed by such Surgeon General after consultation with a conference of the State and Territorial health authorities and the directors of medical service hereinafter provided, the amount to be paid to each State for such quarter from the allotment to such State, and shall certify the amount so determined to the Secretary of the Treasury. On receipt of such certification, the Secretary of the Treasury shall, through the Division of Disbursement of the Treasury Department and prior to audit or settlement by the General Accounting Office, pay in accordance with such certification.

The moneys so paid to any State shall be expended solely in carrying out the purposes so specified in section 601-C and in accordance with the plans presented jointly by the health authority of such State and the director of medical service of such State and approved by the Surgeon General of the Public Health Service; and, provided that before any allotment shall be made to any State under this section, the State and/or the county or other

legal subdivision shall have provided by law for the permanent and adequate maintenance for such hospitals or diagnostic centers.

The Secretary announced that the representatives of the National Medical Association were present, and the Speaker requested them to arise and be recognized.

#### Recommendations on Appointment of Special Executive Committee

Dr. E. N. Roberts, Idaho, presented the following recommendations, which were referred to the Reference Committee on Miscellaneous Business:

We respectfully acknowledge that no plan designed to meet the problems confronting our profession can reasonably be consummated except by the deliberation and conferences of men qualified by actual practice and special study for such work. We feel that the House of Delegates is too unwieldy a body for the successful development of such a plan, and that there is no other group within the American Medical Association sufficiently representative of the membership or qualified in other respects for work of such magnitude.

We acknowledge that the efforts made heretofore on the part of the leadership of the American Medical Association to meet this problem, which affects more than twenty million people and hundreds of millions of dollars, have not borne a reasonable relationship to the gravity of the problems involved.

We acknowledge that our profession has been placed inadvertently and unjustly in a position by which we are made to appear selfishly indifferent to the medical needs of the indigent.

We acknowledge that the quality of medical care received by the indigent will not be adversely affected by government aid in securing such care, and that our profession is prepared to welcome governmental financial aid in such a program, which must be administered by qualified physicians.

The House of Delegates of the Idaho State Medical Association recommends to our delegates to the special session of the American Medical Association:

1. That the House of Delegates form a special executive committee of men within the profession sufficiently large to include men of wide experience in medical economics.

That this committee remain in session continuously as long as may be required to formulate a policy for the care of the indigent.

2. That every effort be made by the American Medical Association to restrict participation in medical affairs on the part of the federal government to the portion of the population who are recipients of relief from the government.

3. That the medical profession recognize the real need for some further plan covering the medical needs of the low income class not on relief and examine sympathetically any plan put forward by the federal government based on the experience gained through the care of the indigent.

#### A Plan for Publicity Against Regimentation of Physicians

Dr. Walter E. Vest, West Virginia, introduced the following Plan for Publicity Against Regimentation of Physicians, submitted by the Parkersburg (W. Va.) Academy of Medicine, which was referred to the Reference Committee on Miscellaneous Business:

We represent a small group (sixty in number) of physicians in one of the smaller cities in a small state. Our academy of medicine has recently approved, and most members have lent support to, a plan for combating the evil of proposed "socialization of medicine." Our ideas regarding the situation are as follows:

1. It seems that certain socialistically minded individuals are determined to force the issue of "socialized medicine" through the next session of the Congress.

2. These groups likewise seem to consider that they can, by force and intimidation, prevent the medical profession from presenting its views in as far as formulating any workable plan is concerned.

3. The American Medical Association has, so far, not taken any decisive action in furnishing to the state or county medical societies any concrete plan of action.

4. A definite nation-wide plan of action is necessary at once so that the voting population can be reached and given medicine's side in the controversy.

5. Component medical societies are the best instruments whereby the facts can be presented in each specific locality.

6. Individual physicians composing these medical societies need not editorials in medical journals but personal instruction as to just what socialized medicine is and what to do about it.

With the above premises in mind, the Parkersburg Academy of Medicine, representing seven counties in West Virginia, has taken decisive action after consulting with officials of the state medical association. As far as we know, we are the first county medical society to approach the public openly on this subject. We feel that we have not been unethical or violated the accepted, ethical canons of the profession. We held several meetings, and one of us made a six weeks study of available literature. All angles of the problem were discussed, and finally most of the members of the Academy agreed on a publicity campaign. The salient points in this campaign are as follows:

1. Appointment of an information committee, which is responsible for all publicity.

2. Passage of a resolution embodying these principles:

- (a) A statement calling attention to the current agitation regarding "state controlled medicine," "governmental medicine," "socialized medicine" or other like terms.

- (b) Call attention to the fact that so far publicity regarding this issue has been of a biased nature.

- (c) Call attention to the fact that the medical profession has always been the first to attempt to protect public welfare.

- (d) State specifically that organized medicine is willing to cooperate in any and all ways, if given the opportunity, and to improve medical care for indigent and low-income groups.

- (e) The medical profession feels that it should be given the opportunity to plan, supervise and manage any "sickness insurance" plan.

- (f) Go on record as opposing regimentation of medical practice by politicians or other lay bodies.

These principles have been embodied in a resolution and were published in the local newspapers.

3. Contact with the local newspapers through the editors and reporters in an attempt to get these molders of public opinion on our side.

4. Assessment on the individual members of the medical academy for sufficient funds to carry on the campaign.

5. Attempt to give the newspapers stories of local interest, and to be careful that not too many articles are published since their news value will be impaired. It is suggested that two articles a week are sufficient. In some localities a system of serialized articles, running daily for a week, has been used.

6. We obtained literature from the Bureau of Medical Economics and distributed a package of eight pamphlets to every physician for his own education.

7. We obtained, with Dr. Leland's permission, a copy of his article entitled "Is Medicine to be Socialized?" and we had 10,000 copies printed. These pamphlets, with suitable placards, were placed in every physician's office where the general public quickly used them and took them to their friends. They were likewise placed in hospitals, drug stores and other public places.

8. We approached the various service clubs in the city and had prepared speeches delivered at their luncheon groups, feeling that this is the class of individual whom we must reach, namely the so-called middle class.

9. We have distributed, through fraternal orders and like organizations in their periodicals, short, easily understandable articles explaining socialized medicine.

10. We have written an open letter—and have had it published in our local newspapers—to all political candidates, local, state and national, and have asked for replies. These replies, when received, are published in the newspapers. We have kept a complete file of all publicity, letters received and clippings bearing on the whole question of socialized medicine, so that they are available for reference and other work.

This, in brief, is our feeling and our plan of attack on this problem. We bring it to the attention of the House of Delegates because we feel that the time to begin is now and that the place to begin is with each physician in his own locality, with his own patients and by his own county medical society. We wish to urge that the various state medical societies appoint a coordinator to see that various county medical societies carry on this work. We would likewise suggest that the American Medical Association allocate from its treasury sufficient funds to pay representatives in every state to visit each county medical society and to advise them further how to proceed. We wish to suggest two other things:

1. That we as a body stress the political significance of supporting those men who are candidates for office or present office holders who will oppose in the next session of Congress or state legislatures any plan for socialized medicine in the administration of which the physician is not given the controlling voice. We feel that if passage of legislation not favorable to us can be delayed for a while we can formulate



for ourselves plans which will meet the requirements of ethical medical practice.

2. That, if necessary, every physician in the United States should be assessed a certain amount, the collection of which is to be undertaken by the component medical societies, to be used in forms of publicity, in paying traveling representatives or in financing necessary lobbies.

In conclusion, we feel that in presenting these plans we should likewise pass on to other bodies contemplating similar publicity certain mistakes which we made and certain facts which we learned:

1. We feel that Dr. Leland's article, while an excellent one for the medical profession and for the better educated members of the laity, is perhaps not couched in simple enough terms to be as understandable as it might be; consequently we would suggest that, if this article is to be used, it be further simplified and explained before it is reprinted or that another article be written in the language of the laity.

2. We have found that tremendous numbers of individuals, including dentists, lawyers and other professional persons, are not even superficially conversant with this issue.

3. We likewise learned that too many newspaper articles published at one time or in a series worked against us, in that continued repetition destroyed reader interest.

4. We discovered that perhaps our best plan of attack was to each individual patient, by explanation in understandable terms, and we found that it required intense personal interest on the part of the physicians to keep "hammering" at the proposition day in and day out.

5. We lastly discovered that we must expect a certain amount of opposition from within our own ranks from those who are practicing in a group "under an umbrella," so to speak. We feel that this group can be brought into our way of thinking if we will provide workable plans in each community in order to care for those in the lower income groups and thus enable these physicians to have better remuneration.

In summing up, therefore, we wish to thank you for the opportunity to present our plan with its reasons, its mistakes and its results, and to make a plea that your component medical societies follow some similar plan in making this a nation-wide educational campaign against the proposed regimentation of medical practice.

#### Recommendation on Cooperation for Needed Improvements in Care of Indigent

Dr. A. T. Gundry, Maryland, presented the following recommendation, which was referred to Divisions 2 and 3 of the Reference Committee on Consideration of the National Health Program:

WHEREAS, The proposals of the National Health Conference recently held in Washington, which should be primarily a medical problem, are in the light of present conditions primarily an economic problem; and

WHEREAS, It was no doubt thought by those who first made these proposals several years ago that the financial conditions of the country would improve and permit these efforts, but instead taxes are increasing, the budget is independently out of balance, the national debt is increasing, business is uncertain and uneasy, and the present management of social security matters does not establish confidence; and

WHEREAS, The proposals of the National Health Conference would entail the expenditure of nearly a billion dollars a year, adding to the difficulties above mentioned; therefore be it

*Resolved*, That while this organization wishes to cooperate in any measures for the improved health of the country, it feels that the need for such legislation as recommended is not yet proved and in the present financial condition of the United States it is unwise to attempt such a costly problem as outlined; and be it further

*Resolved*, That this organization recognizes the need for development of many phases of the health problem but feels that the development should be gradual and approximately on a "pay as you go" basis with a balanced budget; therefore it is

*Recommended*, That the federal and state governments and the American Medical Association cooperate to their fullest ability to bring about the most needed improvements in the care of the indigent and medically needy but that the elaborate program proposed be abandoned for the present.

A motion to set a time limit for the introduction of new business at this special session was tabled.

#### Proposals Concerning Scope and Methods of Governmental Participation in a National Health Program

Dr. H. L. Snyder, Kansas, introduced the following proposals, which were referred to each of the five divisions of the Reference Committee on Consideration of the National Health Program:

Health is fundamental for the happiness and welfare of any people. The fact that neither the federal nor state governments have ever had a definite policy in this important field has led us to set forth our proposals on this subject. Governmental participation in the solution of such problems should be carefully planned and the limitations of such participation clearly defined.

In arriving at our recommendations we accept certain premises which we believe are pertinent and fundamental, among them the following:

1. The economic situation of an individual or group has a definite relationship to health and consequently to medical needs and medical service. Poverty and disease notoriously go together. Attempts to service the health of the poor without attention to the fundamental economic situation which results in poor food, inadequate clothing and shelter and the mental stress accompanying such conditions are sure to fail.

2. The attainments of medical science, including dentists, pharmacists and nurses, in the United States are not excelled in any country in the world. No people in the world have access to better medical care whether measured qualitatively or quantitatively, than have the people of the United States.

It follows that any proposed changes in our present system of medical service must improve present conditions and must not merely replace shortcomings now existing with new evils. At all times contact must be maintained with reality, and experience is a safer guide than theory.

3. Experience elsewhere has demonstrated that any solution of the problems of medical care that even approaches medical socialism is fraught with dangers that are both grave and certain. Some of such dangers are:

(a) The lowering of standards of medical practice and the retardation of the progress of medical science.

(b) The imposition of an intolerable tax from which inferior medical service results.

(c) In general, the encouragement of the tendency to socialize all industries and professions as a panacea for the ills of the body politic.

With the foregoing fundamental considerations in mind, we proceed to our discussion.

The problems incident to the preservation of health and provision of medical care naturally divide themselves into two categories. There are first those problems usually referred to under the terms "public health" or "preventive medicine," and second those which involve the health of the individual citizen and his ability to secure good medical care.

#### PUBLIC HEALTH AS A NATIONAL PROBLEM

In general, the question of public health concerns local governments, municipal, county and state, more directly than it does the federal government, although the latter is intimately and properly concerned with some of its phases. Contagious disease recognizes no state boundaries and the results of criminality produced by physical and mental disabilities are felt throughout the nation. The welfare of mothers and newborn babies continues to be a national problem of major importance. The present program for child health and maternal welfare is susceptible of extension on a nation-wide scale through complete organization of the 3,000 counties of the nation.

The control of the venereal diseases is another problem which must be met. Means must be provided to make our present knowledge generally applicable and the known diagnostic and curative procedures generally available. The far-reaching program for control of the venereal diseases which has been inaugurated by the United States Public Health Service must be continued and enlarged as experience indicates the best methods of attack.

We are convinced that as advances in medical science and knowledge take place, increased governmental participation in making them practically applicable in the field of preventive

medicine will be clearly indicated and will receive the support of the medical profession and the public. We record our conviction here that the medical profession because of its training and experience is best fitted to furnish leadership in all movements for improvement of the health of the people. This place of leadership must be recognized and no paternalistic or bureaucratic control permitted to destroy the freedom and initiative of that profession.

A comprehensive program for the prevention and cure of disease such as we envisage must include the cooperation not only of the federal government with state and local governments but of all governmental health officials with private physicians throughout the length and breadth of the land. Such a program is in harmony with our determination that private enterprise in business and the professions must be preserved, encouraged and fostered.

#### ORGANIZATION OF HEALTH ACTIVITIES WITHIN THE FEDERAL GOVERNMENT

The federal government contains now within its structure numerous departments and bureaus which carry on activities related to health and medical care. The separate and uncoordinated administration of these numerous activities promotes waste and inefficiency. It appears logical and necessary that all activities which concern health and medical care except those of the Army, the Navy and the Veterans' Bureau should be concentrated within one department of the federal government. It is our belief that this desirable object can be accomplished without the creation of any new departments or bureaus. Although it may seem theoretically desirable to establish a new department with a cabinet head to control and direct activities of such vital importance as those connected with the health of the people, it is our belief that economy in government is of such fundamental importance in the years immediately ahead that concentration and coordination should be our object instead of expansion. The excellent organization and the record of achievement of the United States Public Health Service points to it as the governmental bureau in which all health activities of the federal government should be concentrated. It is our belief that such a concentration will promote efficiency, secure coordination of activities and promote unification of our national health program.

The necessity for drastic economy in administration of government renders it highly inadvisable to create new departments of government in the immediate future. For this reason we do not recommend at this time the creation of a Department of Public Welfare which has been lately advocated in some quarters. If and when such a department is created its duties would be so manifold that no attempt should be made to include within it a bureau of public health. It is especially undesirable that the care of the health of the people should be relegated to a secondary place within a department with such vague and unrelated activities as are described by the terms "social security" and "public welfare."

We are especially impressed with the necessity for a unified program to replace our present uncoordinated and haphazard methods of dealing with health matters through the federal government. Large appropriations of funds are made from time to time for specific purposes without due regard to the entire health program. Veterans' and other hospitals are often established out of purely political considerations; and the federal government has a tendency to assume duties which should be largely local and which should have only a minimum of federal assistance.

The time has arrived when, after exhaustive study, the place of the federal government in health activities should be defined, a definite policy adopted and an efficient organization established.

#### MEDICAL CARE OF THE INDIVIDUAL CITIZEN

The second sphere of proper governmental concern with public health embraces the problem of insuring good medical care to every citizen regardless of his economic status. That such medical care should be available to all is obvious whether the matter be considered from the point of view of pure altruism or from that of a selfish desire to protect one's own health. Disease prevalent in the underprivileged groups knows no social or economic boundaries.

The problem is enormously complex because it is intimately bound up with all the social and economic problems that harass modern civilization. It is therefore impossible to offer any practical single solution. Although the problem is real and must be faced, it should be approached in the light of one of the fundamental proposals which we have already stated, namely that European experience has demonstrated that experiments in medical socialism are dangerous and give rise to far-reaching evils which are much worse than those we are attempting to cure.

It is our belief that there is an American way to solve these problems whereby we may preserve a maximum of individual freedom and initiative and utilize a minimum of governmental or bureaucratic control.

With respect to his ability to command adequate medical care for himself and his dependents, the citizen falls into one of three groups. There are those whose economic resources are equal to all demands, ordinary and extraordinary; second, the great middle class, generally able to meet ordinary demands, but likely to be economically swamped by prolonged or high-cost illnesses; and third, those living at or below a bare subsistence level who cannot pay for medical care at all. The first group needs no aid, governmental or other, and may be dismissed from further consideration. The proper spheres of governmental activity in helping the two remaining groups with their medical problems are clearly divergent and demand separate consideration.

#### MEDICAL CARE FOR THE MIDDLE INCOME CLASS

In our opinion, every consideration of a sound governmental policy indicates that government should approach the problem of the middle class, which comprises the great bulk of self-supporting American citizens, determined to avoid paternalism. The keynote of its policy should be to help the citizen to help himself.

We note with approval the nation-wide survey being conducted by the American Medical Association through its constituent state and component county units to determine the medical needs of all the people. We are hopeful that out of this survey may come such a definite knowledge of the facts that inadequacies in present methods may be corrected in every local community.

We approve the principle of hospital service insurance which is being widely adopted throughout the country. It is susceptible of great expansion along sound lines and to many groups of the population which it has not yet reached. Experience in the operation of hospital service insurance or group hospitalization plans has demonstrated as a fact, what was clear to many before they were organized, that these plans must confine themselves to provision of hospital facilities and must not include any type of medical care. Within their limitations they are very helpful to the people of employed groups in meeting that part of the costs of illness entailed by hospitalization.

In addition to insurance for hospitalization we believe it is practical to develop insurance plans to cover, at least in part, the costs of prolonged or expensive illness. Agencies set up to provide such insurance must be under rigorous governmental control to insure their soundness and financial responsibility, just as insurance companies are everywhere regulated. We are, however, opposed to governmental subsidy of, or other financial participation in, their activities. We believe that general experience has proved beyond doubt that unsound cooperative methods of voluntary health insurance invariably lead to adoption of compulsory health insurance with its inevitable accompaniment of government subsidy.

#### DISCUSSION OF COMPULSORY HEALTH INSURANCE

We are aware of the fact that most European nations have adopted some variety of compulsory health insurance under state control. Study of the operation of these systems in various countries and examination of the proposed laws for compulsory health insurance introduced into the U. S. Congress and the legislatures of the states bring out the following facts:

1. Compulsory health insurance is a system of taxation which requires a wage tax, a payroll tax and a government subsidy derived necessarily from general taxation.

2. There is much testimony to the effect that the medical care received by the beneficiaries of the compulsory insurance is of an inferior quality as compared with the average prevalent in the United States.

3. Compulsory health insurance requires for its operation a large administrative force with consequent development of bureaucracy and an administrative expense far beyond any possible value in medical care received by the people.

4. A compulsory health insurance system results in a high degree of governmental control of both the physician and the patient.

For these reasons we are not willing to foster any system of compulsory health insurance. We are convinced that it is a complicated, bureaucratic system which has no place in a democratic state. It would undoubtedly set up a far-reaching tax system with great increase in the cost of government. That it would lend itself to political control and manipulation there is no doubt. Great difficulties have been found in the practical application of the old-age pension and unemployment insurance laws and it is generally admitted that they are relatively simple operations compared with a system of compulsory health insurance.

In every nation in which compulsory health insurance has been made a part of the national economy there has been a steady, continuous decline in the democratic features of the government.

We recognize the soundness of the principle of workmen's compensation laws and recommend the expansion of such legislation to provide for meeting the costs of illness sustained in industry.

We repeat our conviction that there are sound types of insurance which may assist the middle income group to finance their sickness costs without state subsidy. Further development of group hospitalization and establishment of insurance plans on the indemnity principle to cover high-cost illnesses will go far in the solution of these problems.

#### MEDICAL CARE OF THE INDIGENT

The proper sphere of governmental activity with respect to the care of the indigent falls into an entirely different category from that of the care of the middle income group. It is almost entirely a problem for local governmental units. Heretofore it has been met locally largely through the establishment of tax supported hospitals in which are treated the more serious illnesses of this group—and those that constitute a public health menace. Some further resources are provided by the free clinics of private hospitals mainly supported by the contributions of charitably disposed citizens.

In few, if any, localities is there any service offered even approximating adequate home medical care for the more or less minor illnesses of this group, or providing mechanisms to make the vast resources of modern preventive medicine available to them. Whether considered from an altruistic point of view or from that of the public health, it is obvious that such provision is necessary.

As a matter of fact, immemorial usage has left the care of the indigent largely to the freely given and unremunerated service of the medical profession.

We hold that such care is fundamentally a proper concern of the state and should be adequately supported through general taxation. In no other way can the care be given that is necessary to conserve the health of the individual and to prevent his becoming a menace to the health of others.

It is plain to us that in carrying out such a tax-supported system we must conserve all of the resources of our long-established system of medical care through private practitioners of medicine. It is our firm belief that government (preferably local government) should provide the funds needed for the medical care of those who cannot care for themselves but we just as firmly believe that the function of providing the medical services resides in the medical profession and should remain there. Similarly, whenever private community hospitals have the facilities for care of the indigent they should be utilized to the fullest possible extent before new government hospitals are provided.

We are aware of the dangers that may be involved in the distribution of the funds necessary to carry out a program

of state care of the medical needs of the indigent. We therefore advocate the utmost caution in devising methods for such distribution which will prevent these funds from being subject to political control. Communities should study this problem, in consultation with local medical and welfare organizations, with the firm intent to utilize to the fullest possible extent existing agencies, and to avoid the menace of setting up expensive bureaucratic machinery calculated to absorb a large share of the public funds primarily intended for medical care.

We summarize our position on health and medical care as follows:

1. The United States has made great progress in the past, and the quality of medical care now provided is of a very high grade. We wish to see those methods and practices perpetuated and improved which have brought us to the present high plane.

2. We wish to see established a well coordinated program in state and nation for the control and elimination of infectious disease and for the improvement of maternal and child health.

3. We advocate concentration of the health activities of the federal government within the structure of the present United States Public Health Service. We believe that this is in accord with economy in administration and added efficiency without materially increasing the tax-load of the people.

4. We believe that the solution of the problem of providing adequate medical care for the great middle class of the population should be left to the citizens and medical profession of local communities. They alone know and understand their varied requirements. Such endeavors should receive the most sympathetic support from government in every legitimate way that is free from bureaucratic control.

The insurance principle should be adopted for this class where it is sound and resolutely rejected where it is economically unsound and where it promotes paternalism in government or medical socialism.

5. We advocate recognition of the principle that the complete medical care of the indigent is a function of the community, medical profession, dental profession, pharmacists and nurses and that such care should be organized by local government units and supported by tax funds.

Since the indigent sick constitute a menace to the entire population, we recognize that the necessity for state aid may arise in poorer communities and the federal government may need to participate when the state is unable to meet emergencies.

6. Great progress has been made in the United States in the reduction of morbidity and mortality among all classes of people and in all matters pertaining to public health and medical service, and the quantity and quality of medical care now provided is of very high grade. We wish to see these methods and practices perpetuated and improved which have brought us to this present high plane.

7. We wish to see established a well coordinated program in the various states in the nation for improvement of food, housing and the other environmental conditions which have the greatest influence on the health of our citizens. We wish also to see established a definite and far-reaching public health program for the education and information of the people in order that they may take advantage of the present medical service available in this country.

8. We repeat that the solution of the problem of providing adequate medical care for the great middle class of the population should be left to the citizens and medical profession of local communities. They alone know and understand their varied requirements. Such endeavors should receive the most sympathetic support from government in every legitimate way that is free from bureaucratic control.

9. We believe that public health and medical service as a whole will suffer and deteriorate through the application of regimented and governmentally controlled methods of medical practice, and we are convinced that the public health of the nation can best be maintained through continuation and advancement of the present individualistic practice of medicine.

### Missouri Plan for Medical Care of All the People

Dr. Carl F. Vohs, Missouri, presented the following plan, which was referred to each of the five divisions of the Reference Committee on Consideration of the National Health Program:

It is a little over four years ago that the Missouri State Medical Association began to study the sociohealth movement in this country and the accomplishments of such movements in European countries.

We came to the conclusion that compulsory health insurance with cash benefits is not a desirable solution to our problems. The one outstanding problem before the medical profession today from the standpoint of the curative treatment of disease is the development of an adequate medical service for all persons at a cost which can be met by them in their respective stations in life. It is in answer to this problem that the Health Security Administration of the State of Missouri is being planned and developed.

Following the survey that is being made of the medical needs, the state is to be divided into economic units. Each unit will support in a coordinated program:

1. A Group Hospitalization Plan.
2. A Medical-Dental Service Bureau.
3. A Central Registration Bureau.

Representatives from the boards of management of each of these bureaus will make up the Health Security Administration of the economic unit. A representative from each Health Security Administration will sit on a state board to be known as the Health Security Administration of the State of Missouri.

It is planned that this Health Security Administration of the State of Missouri will be in control of all plans and monies established by federal grants-in-aid. It will have the right to assist local economic units in the building of needed hospitals and clinics from state and federal funds.

The respective local boards are made up of medical men, dentists, hospital representatives and the public. If we must have a national health program, such an administration could handle it most safely and most sanely and would meet all the requirements of the Technical Committee in its suggestions and plans for a unified system of state health.

We have divided the people into four classes. The upper 25 per cent of the people can pay for all medical, dental and hospital care at all times. The second 25 per cent can with some assistance pay reasonable fees for health care. For this group we have arranged the Medico-Dental Service bureau for the postpayment of their medical, dental and hospital bills. These bills are to be liquidated in a year's time. For this group we also have inaugurated group hospitalization which at a cost of 75 cents per month per individual, \$1.25 per month for husband and wife, and a maximum of \$1.50 a month for any sized family, pays for thirty days a year for each of them in any of our hospitals. If they stay longer than thirty days, one third of the bill for six months is paid. The average stay in the past two years has been 9.7 days.

For the third group of 25 per cent of our population, the two bureaus are of great service. Group hospitalization will take care of their hospital liability, and their medical and dental bills must be scaled down to meet their ability to pay. For the lower strata of this group, which of course varies greatly in number in direct ratio to our depressions and recessions, the third bureau, the Central Registration Bureau, is intended. The patient will pay what little he can for his hospitalization if he is not a member of Group Hospitalization, and the remainder is to be paid out of United Charity Funds at an agreed per diem cost. The medical care after proper investigation of these patients will be given gratis by the medical profession. It is hoped after the indigent load of the community has been definitely established by the Central Registration Bureau to work out a prepayment cash payment plan for medical and dental care for this whole group.

The last group of 25 per cent of our population will always be the responsibility of the community and their care should be paid for on a per diem basis by the United Charities as they are vouched for by the Central Registration Bureau. If the funds of the United Charities are not sufficient to liquidate this liability, then city, state and national tax funds must

subsidize the program. This will fit in well with the national health program.

If the medical and dental burden for the care of this group becomes too great, then plans like the Los Angeles County Plan and the Oakland (Mich.) Plan will be instituted. These plans pay for the care, medical, dental, and other, out of tax funds. Again we can use federal grants-in-aid.

We in Missouri feel that this is a "state system" such as is recommended by the National Health Conference and meets the suggestion that "The role of the federal government should be principally that of giving financial and technical aid to the states in their development of sound programs through procedures largely of their own choice."

It is a state system establishing and meeting all the needs of all counties in the state; it is voluntary in every aspect and without political control.

### Resolution on Change of Medical Care for the People

Dr. Charles A. Dukes, California, read a resolution on Change of Medical Care for the People, which, the Chairman ruled, was not germane to the call.

### Recommendations from Medical Society of the State of Pennsylvania

Dr. Francis F. Borzell, Pennsylvania, presented the following summary from the Medical Society of the State of Pennsylvania, which was referred to the Reference Committee on Consideration of the National Health Program and its respective divisions:

Following the call issued by the Board of Trustees of the American Medical Association for a special meeting of the House of Delegates to be held in Chicago beginning September 16, for the purpose of considering the program so widely publicized after the July 18-20 meeting of the Interdepartmental (Federal) Committee to Coordinate Health and Welfare Activities in Washington, the following steps were undertaken by the Medical Society of the State of Pennsylvania:

The attention of the officers of all component societies was immediately drawn to the call, the date of the meeting, the names of the members most likely to represent the state society at the special meeting in Chicago, the source of a full report of the National Conference, recommendation that individual members convey their impressions to individual delegates from the Medical Society of the State of Pennsylvania, an abstract of the recommendations of the Federal Technical Committee was distributed to all prospective Pennsylvania delegates, to the members of the state society Committee on Public Health Legislation and representatives of the Committees on Public Relations and Medical Economics, and to the members of the Board of Trustees of the state society, who had in the meantime called a special meeting of all the above mentioned, to be held at the state society's building in Harrisburg, September 7.

At a meeting of the Public Health Legislation Committee held the morning of September 7, there was a generous attendance of delegates, state society officers and representatives of other state society committees. At the joint meeting held under the sponsorship of the Board of Trustees during the afternoon, there was a larger attendance and a full discussion of not only the recommendations of the Federal Technical Committee but also the conclusions of the morning conference held under the auspices of our Committee on Public Health Legislation.

As a result of all the foregoing, the delegates who will represent the Medical Society of the State of Pennsylvania at Chicago on September 16 were given the following for their most careful consideration in the light of that which may develop during the deliberations of the special session in Chicago:

1. Urge again more especially because of the recommended expansion of health services under federal sponsorship the creation of a federal Department of Health represented in the President's Cabinet by a Secretary of Health, authorized to coordinate all health activities which are now scattered throughout various other federal departments. This department should maintain a rigid civil service or merit system thereby insuring to the public continuous and uninterrupted ever-improving health service easily available but entirely removed from the

influence of partisan politics. This can be accomplished well within the province of a truly democratic form of government.

2. Advise the calling of further conferences of the entire national group for the purpose of considering in review the actual necessity of the recommended expansive program which might be replaced by proposals to improve the present facilities for the medical care of the indigent on a much less extravagant basis. The state of desired perfection in health will in all probability never exist under any authority. Nevertheless, we commend the advantages of logical, reasonable expansion of existing health and sickness service facilities such as may result from coordinated study and activities under the sponsorship of the United States Public Health Service and the direction of all licentiates who are qualified and legally responsible for the medical care of the citizens of this nation in cooperation with governmental authorities.

3. As the necessity for expansion of this program may be developed and approved, advise (a) the maintenance at all times of definite assignment of proper functions for the care of the indigent sick with (b) equally definite functions proposed for such service to any other social or economic group.

4. Provide each member of the Congress of the United States with a copy of all plans proposed in order that each may discuss with his constituents the necessity for the proposals, as well as the ability of the taxpayers to pay for same.

In the development of such plans for sickness service to the low income group of the population as were recommended by the National Health Conference, they should be supervised entirely by the various licentiates involved in the delivery of the service and should be maintained at a level to insure the best quality of health service so as not to justify intervention by political groups. This can thus be accomplished, at the same time maintaining a true democracy in our form of government.

5. Request the American Medical Association to maintain representation in Washington helpful to Congressmen and Senators regarding the medical profession's point of view on all health legislation and also at the same time keeping the constituent state medical societies properly informed on activities in the federal Congress with appropriate suggestions as to the kind of information which should be conveyed to the members of Congress from each state by the proper representatives of the given state or district medical societies.

The problem of the health of our nation having been precipitated into the midst of political consideration, it must be for the present handled by the professional groups concerned by appropriate methods.

6. Alternatives to overly expansive and expensive governmental proposals for the development of health programs must be offered by the medical and allied professional groups and constructive and cooperative effort must be continuously maintained if the American public is to consistently receive an efficient health service.

7. Carefully chosen, nonconfusing health information, free from partisanship, should, through each county medical society, be projected into the life of the various communities. The proper officers of each county society should seek opportunity for representation on the programs of as many social clubs and public forums as possible. Information distributed should deal with the various phases and relations of the health of the public and of sickness service in a uniformly clear yet concise manner.

In addition to the foregoing, presented without definite instruction but for the guidance of the Pennsylvania delegation, the Board of Trustees requested that the following resolution, referred to the Board by the Dauphin County Medical Society, be conveyed to the House of Delegates of the American Medical Association in special session at Chicago:

WHEREAS, The Social Security Act of Congress made possible the creation of an Interdepartmental Committee to Coordinate Health and Welfare Activities; and

WHEREAS, The Chairman of said Interdepartmental Committee convened a session known as the National Health and Welfare Conference; and

WHEREAS, Various proposals there discussed are economically extravagant, sociologically impracticable, scientifically stifling and professionally deteriorating; and

WHEREAS, The President of these United States did publicly proclaim that a "coordinated national program of action" is imperative; be it

*Resolved*, That the Dauphin County Medical Society, through its duly constituted State Medical Society, does hereby petition the American Medical Association:

(a) To announce, publish, proclaim and promulgate by commercial radio, press release, paid advertisement and public acclaim such specific methods and measures as its duly constituted officers and its House of Delegates recommend as practicable and expedient, within scientific and economic limits, in the prevention of illness and the conservation of the health of the citizens of the nation, and

(b) To combat, oppose, contradict and amend, by the same means, such idealistic, fanciful, impracticable and extravagant schemes as will rebound eventually to encourage malingering, stifle initiative, retard progress and disrupt the traditional physician-patient relationship; and be it further

*Resolved*, That the proper representatives of the American Medical Association be empowered also to accept voluntary contributions from individuals and organizations, lay and professional, who may choose to assist in underwriting the expense incident to this proposed effort.

The preceding is a very brief summary of conclusions arrived at in conferences held at special meetings at 230 State Street, Harrisburg, the morning and afternoon of September 7, conferences being attended by eleven of the twelve members of the Board of Trustees of the Medical Society of the State of Pennsylvania, thirteen of the fifteen members of the Committee on Public Health Legislation, representatives of the State Society Committees on Public Relations and Medical Economics, the Editor of the *Pennsylvania Medical Journal*, and by seven of the eleven delegates from Pennsylvania who have agreed to serve at Chicago.

Those receiving this summary are requested to indicate on the enclosed post card, by return mail if possible, their reactions to the report as herewith submitted.

EDGAR S. BUYERS, Chairman.

WALTER F. DONALDSON, Secretary.

Sept. 12, 1938.

#### Plan from New Jersey for Medical Care of the Indigent

Dr. E. R. Mulford, New Jersey, presented, without reading, the following plan, which was referred to Division 3 of the Reference Committee on Consideration of the National Health Program:

#### From the President to the Trustees:

The National Health Conference held in Washington, D. C., on July 18, 1938, was the most significant and far reaching medical event in American history, although it was neither conceived nor conducted by medical men. The Medical Society of New Jersey is in sympathetic accord with the broad objectives and humanitarian purposes which guided that conference. We believe that we are our brother's keeper. We agree that preventive health services in the United States are inadequate; that more hospital beds are needed, particularly in rural areas; that the distribution of medical care has not kept pace with the progress of medical science so that all people who want medical care do not always receive all that science has to offer, and, finally, that the economic burdens of illness fall heaviest on the poor who are least able to bear them. With these broad principles we fully agree.

As a sequel to the National Health Conference the next Congress will be asked to appropriate \$850,000,000 with which to begin proposed reforms. This sum is to cover the first year only and will be distributed to local areas that can match federal funds dollar for dollar. The wisdom of this we question. Areas most in need are least able to raise their quotas. \$850,000,000 is only the beginning. This will be increased to \$2,600,000,000 a year if all phases of the plan are adopted. The Medical Society of New Jersey urges deliberate, thoughtful consideration of the five phases of the plan, which are in brief as follows:

1. Expansion of public health in maternal and child health, tuberculosis, venereal diseases, malaria, pneumonia, cancer, mental hygiene and industrial hygiene. The annual cost will be \$200,000,000, one half of which is to be furnished by the federal government.

2. Expansion of hospital facilities by providing 360,000 extra beds in general, tuberculosis and mental hospitals and by the establishment of five hundred health and diagnostic centers in inaccessible areas at a cost of \$146,500,000 spread over a ten year period. One half of this cost is to be met by federal



funds. Here again the difficulty lies in the fact that inaccessible arcas cannot raise the other half.

3. Medical care of the medically needy by federal grants for the care of the members of the indigent and low wage groups at a minimum annual cost of \$400,000,000, half of which is to be furnished by the federal government.

4. Federal aid to states in the development of programs of their own choice for self-supporting persons who are burdened by unexpected illnesses and that funds be secured from general or specific taxes and insurance contribution from the beneficiaries.

5. Insurance against wage loss during sickness along the lines of unemployment compensation.

The total cost per year of local, state and federal government will be \$850,000,000 for proposals 1, 2 and 3. Proposals 4 and 5 are not included because they require additional taxes and insurance. It is estimated that the cost of insurance will involve 4 to 4.5 per cent of the income of the entire population so that the total estimated cost of the five proposals is \$2,600,000,000 a year.

While the humanics are commendable, the mechanics are vague and incomplete and some of the specific recommendations are actually dangerous.

It is, of course, readily apparent that problems as vast as those under consideration, with ramifications and implications the end of which no man can clearly foresee, are not to be solved efficiently or with safety to the body politic merely by illimitable appropriations. Sickness and its control, as well as the prevention or amelioration of its aftermath, require more than the mere access to money. Unless such monies are wisely expended by and under the direction of those whose function it properly is to utilize and direct appropriate measures, the program fails.

Much has been said—and not always either well or wisely said—of the cost of sickness; indeed, this motif furnishes much of the driving force behind the program.

But an adoption of the plans of the National Health Conference in toto must inevitably increase the cost of sickness by the necessity of an army of administrators and the equally inevitable red tape inseparable from such administration. In fact, in countries where socialized medicine has been adopted, the cost of administration has equaled the cost of medical care. This cannot be explained on the assumption that the program is new and that new administrations must feel the way and learn by experience, which is always costly. Costly experience has shown the world over that bureaucracy tends to expand and to perpetuate itself; never the reverse.

That the quality of medical care will be lowered is equally inevitable. One need cite only the "lodge doctor" as illustrative of the deleterious effect of the removal of the competitive stimulus and the stultifying influence of a political atmosphere. Under the present system more than one half of the doctors of New Jersey have taken postgraduate work within the past five years; during this time, not a single "lodge doctor" has taken a postgraduate course.

Federalized medicine is inseparable from an ultimate politicalized medicine, which then becomes the instrument of politicians and the health of the people a political weapon in the hands of whatever political party happens to be in power. Inefficient medical care will be the inescapable concomitant of medical regimentation.

There are those who profess to believe that federalized medicine and regimented medicine need not be synonymous and that the one need not necessarily imply or lead to the other and that both can be divorced from political control. With this in view we are reluctantly compelled to disagree. It is, we believe, inconceivable that a program conceived on so vast a scale, to be financed by such extraordinary expenditure, can ever be divorced from its political possibilities and implications. We do not believe that it can be established without bureaucracy or carried on without medical regimentation, nor are we confident that either the one or the other, or both, are in the best interests of those for whom the program is advocated.

For it cannot be successfully denied that if, like all men, politicians are human, they are also all too often inhuman in the avidity with which they tend to subordinate all else

to political expediency and the perpetuation of political power and control.

The sum of \$850,000,000 is based on the assumption that one third of the population of the United States is now without adequate medical care. We are not assured of the correctness of this assumption, which is based on the fragmentary study in 1937 by the United States Public Health Service of only 800,000 families scattered here and there throughout the country.

For the past eight months the various county medical societies of the United States have been conducting a survey of the present supply of doctors, dentists, druggists, nurses, hospitals and all other institutions, departments and agencies, private and public, which are concerned with the health of our people. These surveys are not yet completed. No one knows what they will reveal.

However, in New Jersey a study of the preliminary reports of ten counties show that less than 5 per cent of those who want adequate medical care are unable to obtain it and the difficulty lies in the fact, not that it is not available, but that they do not know where to obtain it. In July of this year the various newspapers and radio stations of New Jersey carried an appeal urging every one who knew of a case that for any reason could not receive adequate care to notify the office of the medical society in Trenton. Repeated appeals have resulted in the receipt of thirty-nine letters, all of which have been referred to the county societies where they belong. The population of New Jersey is four million.

It is possible, of course, that not all the four million population of New Jersey were reached by these appeals and equally possible that not all who read or heard them responded. But that so few responded casts justifiable doubt on the assumption that one third of our people are unable to secure adequate medical care and suggests also that the proportion indicated by this response implies a less acute situation than that hitherto assumed.

The Medical Society of New Jersey urges a careful consideration of the effect on business of the addition of an annual astronomical item of \$2,600,000,000 to the already tremendous tax load. We are not economists, and neither economists nor business men, including manufacturers, employers or representatives of the taxpayers, were present at the National Health Conference or had any more voice than those present at the Conference by invitation. We believe that before levying such a stupendous tax the question should be answered "Will not the huge tax levy destroy business, which is the only source of tax funds?" If so, what then is to become of the helpless?

While the Medical Society of New Jersey counsels caution, we are not obstructionists who believe that the present system is perfect. But America must not mistake change for progress. Long before the National Health Conference was conceived, the Medical Society of New Jersey had developed a positive constructive plan which we believe is sound, economical and free from the dangers of the plan to be proposed to Congress. This plan briefly is as follows:

We propose to lower the cost of illness by the application of sound economic principles in the distribution of medical care by protecting the public against the incompetent and the mercenary within the profession, against ignorant cult practitioners and fraudulent "patent medicines," for which many millions of dollars are foolishly and wastefully expended.

We propose to lessen the unpredictable burden of medical and surgical catastrophes by developing measures for deferred payments and hospital insurance.

We propose to protect the people, rich and poor alike, from costly impersonal, inefficient, politicalized medicine by preserving for liberty loving Americans the inherent right to engage physicians of their own choice. This system has stimulated the greatest medical progress ever known to mankind. To destroy it, rather than to correct its imperfections, would be an irrational public disservice.

We propose to preserve this American system with its free choice of physicians for the low wage group by adjusting medical fees to income, thus preventing pauperizing of patients in clinics, and preserving for them self respect, self reliance and independence.

We propose to secure state aid for the care of the indigent and at the same time to preserve for them the free choice of physicians. In the past, the cost of their medical care has been added to the medical and hospital bills of pay patients. The rapid increase in the number of indigents makes the continuance of this inequitable practice impossible. The care of the indigent is the duty not of pay patients alone but of all the people. Without state subsidy for the indigent, it is impossible to maintain good care for the low wage group at a lowered cost. With state subsidy for the indigent supervised and directed by the medical profession itself instead of politicians it is possible not only to render efficient service to the low wage group but to preserve for the indigent the personal and sympathetic care of physicians of their own free choice. This is not an untried theory but an economical plan proved workable in New Jersey by the original Emergency Relief Administration during the years of 1934 and 1935. Under this plan, the poor applied to the local relief office, where orders were issued for food, fuel, rent and medical care. A list of local doctors was posted. From this list the poor made their own free choice. The list was kept free from irregular, incompetent and mercenary doctors by the state and county medical societies, which were put, as it were, on their honor. The list included, not doctors who basked in the sunshine of political preferment, but all doctors who were willing to keep adequate records and to serve at reduced fees. And they were remunerated by relief funds at the rate of one dollar for each office visit and two dollars for each house call.

The first step in the proposed government reform of the practice of medicine is to expand public health services in maternal and child health, tuberculosis, venereal diseases, malaria, pneumonia, cancer, mental hygiene and industrial hygiene. If Congress appropriates the money, there will be no difficulty in expanding public health services. However, mere expansion of public health is not the goal. The goal is to lessen maternal mortality, to improve child health, to decrease the incidence and ravages of tuberculosis, venereal disease, malaria, pneumonia and cancer and to improve mental and industrial hygiene. Experience in New Jersey has proved that the goal can be reached without the expenditure of huge sums in expanding public health. As an illustration let us consider maternal welfare.

When the Social Security Act became a law, the federal government wanted to send full time field physicians in maternal welfare into New Jersey, but reluctantly, with its tongue in its cheek, turned over the Social Security funds to the state department of health. Instead of importing full time field physicians, each county medical society was permitted to recommend, the state medical society was permitted to approve and the state health department finally selected one field physician from each of the twenty-one counties. The total bill of all these part time field physicians last year was less than \$13,000. Our own field physicians have the confidence of the doctors and the laity at home. They visited every physician in the state who is doing maternity work. They promoted postgraduate study, distributed literature and checked up personally on every maternal death. The Social Security funds also paid for consultations in maternity cases at the rate of \$5 each, \$10 for operative delivery. In addition, these funds remunerated trained nurses \$5 for assistance during delivery. These monies were expended only on members of the low wage or indigent group on the recommendation of the attending physician.

What has been the result? Three years ago the maternal death rate in New Jersey was more than 5 per thousand. It dropped each year so that now it has reached the remarkable figure of 3.2, one of the lowest maternal mortality rates in the United States, indeed in the whole world. This could never have been accomplished by any Public Health Service alone. It needed the wholehearted cooperation of the doctors, nurses and welfare agencies as well. It would have been possible for the long arm of the federal government to reach into New Jersey and with the expenditure of huge sums of money build a large and expensive maternal welfare department of public health. But, no matter how much money is squandered, without the cheerful and willing cooperation of the doctors and nurses

themselves, such remarkable results would never have been secured.

The same principle applies to child health, tuberculosis, venereal disease, malaria, pneumonia, cancer, mental hygiene and industrial hygiene. The Medical Society of New Jersey and the Public Health Department have or are setting up the same sort of machinery to combat every one of the diseases, except one, for which the federal government would ask public health expansion. That exception is malaria, and malaria is not much of a problem in New Jersey.

Let us keep our heads in the clouds and our feet on the ground.

#### Recommendations from the Medical Society of New Jersey

Dr. Wells P. Eagleton, New Jersey, submitted the following statement from the Medical Society of New Jersey, which was referred to Division 3 of the Reference Committee on Consideration of the National Health Program:

Sept. 16, 1938.

Dr. William Carrington, President  
Medical Society of New Jersey  
Atlantic City, New Jersey

My dear Doctor Carrington:

I desire to suggest to you that those of us who are going to attend the special meeting of the American Medical Association as delegates from New Jersey be given an outline of what we think New Jersey has stood and does stand for.

In the first place New Jersey is most desirous that there be no recriminations about responsibility for the former attitude of organized medicine in relation to the government as regards the need of adequate medical care.

Today the federal government is planning to take care of the medical needs of many who are today unable to pay for it and the doctors in many communities should be relieved of the care of the indigent which the medical profession as a whole has so adequately and splendidly provided for in the past. New Jersey wants to aid both the government and many individual doctors who are in need of the assistance of organized medicine. To do this New Jersey believes that organized medicine must present a united front in trying to help the government to formulate a medical policy which will be of the greatest assistance to the nation and still preserve those customs which have guided ethical medical practices in the past.

New Jersey recognizes the seriousness of the problem in some localities but feels that it is much more urgent in some states than in others and more in some districts than in others of the same state. In New Jersey, by the cooperation of the local medical societies with the ERA, the problem has been largely solved. Such cooperation should be the aim of both the profession and the government for cases in actual need of medical assistance.

1. We believe in (a) subsidized medicine, not socialized medicine (b) to be applied only to the indigent poor and families of those on an income bracket below \$1,000 or \$1,500.

The principles of the suggestions offered are that the medical society of each county in every state, which contains members who alone know the medical needs and conditions of each separate district, and thus are the only ones who can properly perform the work, shall, without compensation to themselves, suggest to the federal and state governments as to how to furnish adequate medical care to all indigent and lower income bracket families that may be in need of it, and thus remove the burden from the medical profession, the burden of care of the indigent which it is now carrying almost alone, and that all the plans shall be formulated, administered and operated by organized medicine, for it is only by some such action that the development of a large political medical bureaucracy will be prevented.

With this in view New Jersey would offer the following suggestions to the House of Delegates of the American Medical Association:

A. That there shall be formed in each county a committee of the medical society of that county, whose duty shall be to formulate a medical policy as regards the indigent and families in the lower income bracket below \$1,000 or \$1,500, and to

supervise the operation of such a plan or plans in the county or district in which its members live.

B. That all bills incurred for medical services under such a plan or plans shall be presented to a committee of the county society in which the services are rendered, which shall formulate a reduced charge scheme for the county or districts of which they are members and formulate rules, and shall approve, disapprove or adjust such bills for the care of the indigent and those of the lower income brackets not in hospitals supported by municipal or state funds.

C. That those families who are in receipt of less than \$1,500 yearly income shall be furnished adequate medical care to be paid for through the municipality, county or state in which the service is to be rendered.

D. That no family with an annual income of more than \$1,500 shall be eligible to any treatment by subsidized medicine without an application to the medical society in the county in which the services are to be rendered, a committee of which shall authorize or reject applications within twenty-four hours.

E. That all medical care shall be, as far as possible, furnished by the physician of the patient's choice.

F. That in the administration, local nonprofit making and charitable organizations and groups, such as established district medical societies, clinics, hospitals and welfare agencies, shall be utilized, but that the government insist that all agencies and organizations in a community be properly coordinated before they are given the administration of funds.

A certain degree of coordination has been attempted by the Medical Society of Essex County of New Jersey with some measure of success.

A motion to have all the plans mimeographed for distribution the next day was lost for want of a second.

#### Message from Medical Association of Puerto Rico

The Secretary presented the following telegram from the president of the Medical Association of Puerto Rico, which was referred to the Reference Committee on Consideration of the National Health Program:

Please transmit our delegate following instructions: In alternate read before assembly. Puerto Rico chapter recognizes expansion health organization to combat transmissible and chronic disease. Accepts 50 per cent federal government aid for hospital and medical care of indigent poor. We join in move pro national health department with secretary national health in Cabinet. Puerto Rico Association rejects all forms socialization or nationalization of service as recommended in national health program.

#### Clipping from Washington Evening Star

The Secretary also presented a statement dealing with the investigations of the Federal Department of Justice that had appeared on Sept. 15, 1938, in the *Washington Evening Star*, which was referred to the Reference Committee on Reports of Officers and Board of Trustees.

Dr. E. H. Cary, Texas, moved that the House recess until 2:30 p. m., and that the first order of business at that time be an address by Dr. R. G. Leland, Director of the Bureau of Medical Economics of the American Medical Association. The motion was seconded and carried after discussion.

The House recessed at 1 p. m., to meet at 2:30 p. m.

#### Friday Afternoon, September 16

The House of Delegates reconvened at 2:40 p. m., with Dr. H. H. Shoulders, Speaker, in the chair.

Dr. R. G. Leland, Director of the Bureau of Medical Economics, addressed the House as follows:

The following is an outline of some of the main types of medical care plans now in operation or proposed throughout the United States by the medical profession and other organizations and agencies. A brief discussion of each type of approach is given and the approximate number of such efforts according to available records, which almost always understate the real number. Without prejudice to any other medical societies, I shall mention a few localities in which typical examples may be found.

1. *State and County Medical Society Plans*: One hundred and fifty-two operating, eighty proposed.—State and county

medical societies have entered into a variety of arrangements in an effort to improve the distribution of medical services. These medical society plans can be divided into three main categories:

(1) *Plans to Care for the Indigent Sick*: One hundred and eight operating, thirty-nine proposed.—Arrangements are entered into by the county medical society and local relief authorities to provide indigent sick persons with free choice of physician, usually to supplant the rather unsatisfactory and inadequate arrangement with county physicians. These arrangements follow either a per capita fee schedule or a lump sum payment basis. (See the publications "Care of the Indigent Sick," "Medical Service Plans" and "Organization of Medical Services.")

(2) *Postpayment Plans*: Twenty-seven operating, twenty-seven proposed.—These plans are organized by medical societies, often in conjunction with dentists or hospital authorities (customary title is Medical-Dental Service Bureau), to enable persons with low incomes to secure medical, dental or hospital services at rates reduced to the person's ability to pay on a deferred payment basis. (See the publications "Medical Service Plans," "Organization of Medical Services" and "Group Hospitalization," pp. 154-155.)

(3) *Prepayment Plans*: Seventeen operating, fourteen proposed.—A number of medical societies have experimented with prepayment insurance plans, which ordinarily consist of a bureau organized to obtain payments from wage earners in low income groups. Members are entitled to designated services based on a reduced fee schedule and are entitled to free choice of a physician, who is paid by the bureau on a pro rata basis according to the services he performs. These plans are in existence in Georgia, Oregon, Utah and Washington. (See the publications "Medical Service Plans" and "Organization of Medical Services.")

2. *Group Hospitalization Plans*: Seventy-eight operating, sixty-two proposed.—These plans consist of a hospital service corporation or association, usually organized by representatives of hospitals or medical societies, which contracts with member hospitals for services and, in turn, contracts with groups of persons to furnish designated hospital services on a prepayment basis. (See the publications "Group Hospitalization," "Prepayment Plans and Hospital Care" and "Group Hospitalization Contracts Are Insurance Contracts.")

3. *Hospital Insurance Companies*: Fifty-four operating.—Certain insurance companies, either newly organized companies usually on an assessment basis or already established stock or mutual companies, offer a special hospital expense only policy that provides designated cash benefits for expense due to hospital residence. There are also a great many insurance companies which offer special hospital supplements in connection with regular accident and health insurance contracts, as well as companies which offer group hospitalization on a cash indemnity basis in connection with regular group accident and health insurance. (See the report "Group Hospitalization," pp. 211-229.)

4. *Flat-Rate Plans*: Nineteen operating.—These are arrangements adopted by certain hospitals whereby an all-inclusive charge is specified for designated services; for example, \$50 for obstetrics patients exclusive of extras or the services of physician and nurse. There are variations of such arrangements called middle-rate or fixed-rate plans. (See the report "Group Hospitalization," p. 16.)

5. *Industrial Medical Care Plans*: At least 2,000.—There are two main types of organizational arrangements for medical care for employees:

(1) Most extensive are the "industrial health services," usually financed by employers, to provide first aid and emergency care for employees and to supervise plant hygiene and safety conditions.

(2) "Industrial medical service plans" provide more extensive medical care for employees and often for their dependents. "Industrial medical service plans" take a variety of forms, which can be classified as follows:

(a) Arrangements, usually financed entirely by the employer, whereby employees and sometimes their dependents receive extensive medical service from physicians employed in company-

owned hospitals or from physicians and hospitals under contract with the employer.

(b) Employee associations, financed largely by employees and in part by the employer, to provide employees and their dependents with extensive medical services in an association-owned "clinic" or hospital or by contract with an independently organized "clinic."

(c) Association of employees, financed largely by the employee and in part by the employer, to provide employees and their dependents with medical services by means of an agreed fee schedule with the local county medical society.

(d) Mutual benefit associations of employees, financed entirely by the employees, whereby funds are collected to provide benefits in cash for members. In addition to cash benefits for loss of time, several of the associations pay cash benefits for medical and hospital expenses. A recent report recorded 306 such associations. Only a few of these associations provide services "in kind" through salaried physicians and association-owned hospitals or through physicians and hospitals under contract with the association.

(e) Group insurance policies with insurance companies financed in part by the employee and in part by the employer, whereby a cash benefit equivalent to a percentage of the weekly salary is paid to an employee absent from work because of sickness or accident. Seven million employees are reported to be included under such group insurance policies. (See the publications "Group Hospitalization," pp. 9-13; "Contract Practice" and "New Forms of Medical Practice.")

6. *Medical and Hospital Benefit Organizations:* At least 500.—Such organizations include a great variety of arrangements whereby funds are accumulated from members through the sale of membership certificates or contracts. Medical and hospital services are offered through hospitals and clinics owned by the organizers or through physicians and hospitals under contract with the organizers. Some of these plans have been the most undesirable of all proposals for the distribution of medical services, such as the 143 organizations in one state which defrauded thousands of persons who thought they were purchasing low-cost medical services. Other of these organizations are wholesale buying clubs to induce physicians to provide services at a 50 per cent discount for members who pay dues. Still other such organizations are cut-rate "clinics," most of which contract with employers to provide medical services for employees. A few of these organizations are on a community-wide basis and pay cash benefits to members for designated medical services. Most of the so-called "community health associations" are privately operated organizations, contracting with a cut-rate clinic or a small group of physicians. (See the publications "New Forms of Medical Practice," "Group Hospitalization" and "Contract Practice.")

7. *Union Sick Benefit Funds and Fraternal Plans:* At least twenty-four.—These organizations are similar to mutual benefit associations except that they are not limited to one company but include all members of a trade union or a fraternal order. Most of these organizations are on a national basis and provide cash benefits for loss of time and for medical and hospital services through companies organized under the fraternal insurance laws. Frequently the local branch or lodge enters into contractual relations with local physicians and hospitals to provide medical services and hospitalization for members. Such "lodge practice" plans provide members with only a meager service and are generally considered the worst type of contract practice. (See publications "Contract Practice" and "Group Hospitalization.")

8. *Group Practice Plans:* At least 300.—Group practice or so-called "private group clinics" are arrangements whereby physicians cooperate in their practice, share office space, own certain kinds of equipment and employ lay assistance in common. Only a small percentage of such groups of physicians have entered into arrangements to provide patients with medical services on a prepayment basis. (See the publications "Group Practice Plans" and "Group Hospitalization," p. 13.)

9. *Student Health Services:* At least 300.—These are organizational arrangements in colleges and universities to supervise

and protect the health of students on campus through entrance examinations, consultations, infirmary care, instruction in personal and public hygiene and control of communicable disease. Such organization might be compared to industrial health services with particular emphasis on health education. Educators and several surveys have criticized those student health services which overemphasize curative medical services to the detriment of the more essential health education program. (See the publication "University and College Student Health Service.")

10. *Rural Medical Care Plans.*—There are two main types of rural medical care plans:

(1) "Health Associations" organized by a group of residents to guarantee a physician an annual income as an inducement to locate in the community. Subsidies and bonuses to induce a physician to locate in a rural community are also sometimes offered by local authorities or by a private individual. Only five community health associations are known to be in existence. The number of bonus or subsidy arrangements is not known.

(2) Farm Security Administration plans to provide medical service for low income or destitute farm families. In most states the arrangements enable Farm Security Administration clients to obtain a loan and to pay physicians directly on a reduced fee basis or the clients to pool their funds with a trustee who pays properly verified bills from physicians according to a reduced fee schedule. In a few states, associations of Farm Security Administration clients have been organized to hire certain physicians to provide medical service for members. Farm Security Administration plans which are usually on a county basis are in operation in twenty states. (See the publication "Rural Medical Service," pp. 72-80.)

11. *Credit and Collection Bureaus:* At least fifty operating, twenty-five proposed.—Credit and collection bureaus are organized by medical societies or by groups of physicians to provide a credit rating and collection service for members. Frequently, these bureaus arrange for postpayment of medical bills similar to medical-dental service bureaus, and some have organized plans to assist patients in financing medical bills. (See the report "Collecting Medical Fees.")

These illustrations should be sufficient to show that there has developed in the United States a large variety of methods of distributing medical services. Some of the plans have been in operation sufficiently long to reveal definite defects; others are still in a developmental and experimental stage; still others give promise of value.

The large number of plans that are now in operation do not include all the agreements between county medical societies and the Farm Security Administration. The details of these plans are on file in the Bureau of Medical Economics.

The most fortunate and hopeful feature of this development to provide means by which people may secure medical services lies in the fact that in the United States there has been and is yet the freedom to develop and direct efforts along dissimilar lines. As yet the road has not been closed by legislation to the search for a variety of appropriate ways of distributing medical services. Once that road is closed by legislation it will become increasingly difficult for county medical societies and other organizations to develop the measures that seem most appropriate for the local conditions of widely different communities.

#### Resolutions on Appointment of Committee to Study Data and Plans

Dr. Felix J. Underwood, Mississippi, for himself and Dr. Harvey F. Garrison, Mississippi, presented the following resolutions, which were referred to the Reference Committee on Reports of Officers and Board of Trustees:

WHEREAS, In August 1935 the President of the United States of America did name a committee, known as "The Interdepartmental Committee to Coordinate Health and Welfare Activities," and this committee did on June 14, 1938, make known at least a portion of its findings to the House of Delegates of the American Medical Association in an address by its Chairman, Miss Josephine Roche, presented by the Assistant Surgeon General of the United States Public Health Service, Dr. Warren F. Draper, and extended an invitation to the House of Delegates, or its representatives, which was accepted, to attend a meeting of the National Health Conference in Washington, D. C., July 18-20, 1938; and

WHEREAS, The findings of this committee were not entirely in accord with nor acceptable to the representatives of the House of Delegates of the American Medical Association; and

WHEREAS, The House of Delegates of the American Medical Association is not unmindful that a large percentage of our population who, because of economic conditions, are not able to pay for adequate medical care and perhaps because of this financial inability are not receiving the attention they should have; and

WHEREAS, It is the opinion of the House of Delegates that organized medicine is anxious to do all within its power to bring about a system that will offer better and more adequate medical care to the indigent and to those of the low income bracket in our country; therefore be it

*Resolved*, By the House of Delegates of the American Medical Association in special session in Chicago, this the sixteenth day of September 1938, that this body is in sympathy with the President of the United States in any laudable effort to improve the physical condition of such a large group of our people who are not now receiving adequate medical care; and be it further

*Resolved*, That the President of the United States of America is hereby respectfully requested to name a committee of five, or such a number as he may deem proper, to act with a like committee from the House of Delegates of the American Medical Association to study the data and plans accumulated by "The Interdepartmental Committee to Coordinate Health and Welfare Activities" and those available from the study of the American Medical Association, with the idea of reconciling the differences now existing as to the proper procedure to follow in order to make proper and sufficient distribution of health facilities to the "consumers of medical care" who are unable to meet such expense; and be it further

*Resolved*, That after the two committees have reached a conclusion as to the desired procedure that should be followed the combined committees shall submit their recommendations to the President of the United States of America, the Board of Trustees and the Speaker of the House of Delegates of the American Medical Association, the latter of whom, by order of the Board of Trustees, shall then call the House of Delegates into special session to consider such report and its final disposition.

#### Reference Committee on Rules and Order of Business

It was moved by Dr. H. C. Macatee, District of Columbia, seconded by Dr. S. J. Kopetzky, New York, and carried, that the Speaker appoint a Reference Committee on Rules and Order of Business. The Speaker appointed as members of the committee Drs. E. R. Cuniffe, New York, Chairman; G. Henry Mundt, Illinois, and John Z. Brown Sr., Utah.

#### Resolution on Continuing Conferences with Representatives of Government and Others

Dr. Andrew F. McBride, New Jersey, presented the following resolution, which was referred to the first three divisions of the Reference Committee on Consideration of the National Health Program:

WHEREAS, The House of Delegates of the American Medical Association approves of the first three broad objectives of the National Health Conference, expansion of public health service, expansion of hospital facilities, and most important of all, the medical care for the medically needy; therefore be it

*Resolved*, That in order to attain these objectives, representatives of the American Medical Association arrange continuing conferences with representatives of government, agriculture, labor and industry.

#### Resolution on Change of Medical Care for the People

Dr. Charles A. Dukes, California, in behalf of the California delegation, presented the following resolution, which was referred to the Reference Committee on Miscellaneous Business:

WHEREAS, The great complexity and rapid changes in social and economic conditions, and in medical science and practice, make it imperative in the best interests of the people of the United States to bring into being at an early day ways and means whereby adequate medical care may be given to all citizens, no matter to what income classes belonging; and

WHEREAS, The present organization of the American Medical Association, its constituent state medical associations, and their component county medical societies, is of a type and scope that would permit medical service of the best scientific standard and quality to be given by them in every portion of each state in the Union; and

WHEREAS, Existing ethical and procedure rules of the American Medical Association, its constituent state associations and their component county units handicap plans designed to give the aforesaid service, when the same are promoted, espoused, controlled or owned by constituent state medical associations, or by their component county medical societies, acting singly or in groups; and

WHEREAS, Recent trends and actions by political and other forces and agencies throughout the United States indicate that compulsory health insurance or similar systems that are not in accord with the ten principles adopted by the House of Delegates of the American Medical Association at the Cleveland annual session of 1934 are more than apt to be promulgated and thrust on the people and medical profession of the United States with results that would undoubtedly lead to woful deterioration in the standards and quality of medical service rendered to the people of our country; and

WHEREAS, Adoption by this House of Delegates, convened in special session in Chicago on Sept. 16, 1938, of amendments to the Principles of Medical Ethics of the American Medical Association, so worded to permit its constituent state medical associations or their component county medical societies, acting singly or in groups, to provide medical care and service, with or without hospitalization care or service, to citizen groups agreed on by the beforementioned state or county medical societies, would greatly aid in the solution of these public health and social problems; and

WHEREAS, It is of paramount importance for organized medicine at once to bring into operation principles and rules that will make it possible for state associations and their component county societies to sponsor or control or own medical care and service organizations as above outlined; and

WHEREAS, The existing Principles of Medical Ethics of the American Medical Association, as given in Chapter III, Article I, Section 4, are so worded that constituent state associations and component county medical societies cannot solicit patient groups of certain income classes for whom more adequate medical service is indicated, the ethical principles as outlined in Section 4 of Article I of Chapter III making it impossible for state and county units to engage successfully in competition with private medical service groups or organizations that have been brought into existence for profit; now therefore be it

*Resolved*, That we suggest that action be taken at the proper time to delete the first sixteen lines of Section 4 of Article I of Chapter III, Principles of Medical Ethics, beginning with the words "Sec. 4.—Solicitation of patients" and ending with the words "has been or is concerned" and to substitute in lieu thereof the following:

SEC. 4.—Solicitation of patients by physicians as individuals, or collectively in groups, by whatsoever name these be called, or by institutions or organizations, whether by circulars or advertisements, or by personal communications, is unprofessional; provided, however, that solicitation of patients by a constituent state association or its component county medical societies, acting singly or in groups, when said solicitation of patients is of an impersonal character and is done in the name of the aforesaid constituted units of organized medicine and for the promotion of medical service plans owned and controlled by such constituted units and designed to give more adequate medical care and service to citizens of certain stipulated income classes, shall be permissible and shall not be construed as unprofessional. This does not prohibit ethical institutions or constituted state or county medical society units from a legitimate advertisement of location, physical surroundings and special class—if any—of patients accommodated. It is also unprofessional for physicians as individuals, or collectively, or in groups, when not acting officially for state or county medical societies, singly or in groups, as before indicated, to procure patients by indirection through solicitors or agents of any kind or by indirect advertisement. It is equally unprofessional for physicians or individuals, or collectively in groups, by whatsoever name these be called, or by institutions or organizations, or by constituted units of organized medicine as above outlined, to procure patients by furnishing or inspiring newspaper or magazine comments concerning cases in which the physician or physicians have been concerned.

#### Statement from Medical Profession in Minnesota

Dr. W. F. Braasch, Minnesota, presented the following statement, which was referred to the Reference Committee on Consideration of the National Health Program and its Division 5:

1. The medical profession in Minnesota is in sympathy with all intelligent efforts to help indigent and low income groups to secure adequate medical care.

2. Any plan that may be adopted should leave to the medical profession and the health authorities of the individual states the exact form the plan is to take.

3. The right of the patient to freedom of choice of physician should be preserved.

4. The medical profession in Minnesota is opposed to any form of tax-supported health insurance.

#### Resolutions Requesting Aid in Finance or in Service

Dr. James C. Sargent, Wisconsin, presented the following resolutions, which were referred to the Reference Committee on Reports of Officers and Board of Trustees:

WHEREAS, There is promise of a movement to revolutionize the practice of medicine in America as evidenced by the interest manifested by federal and state governments in enacting legislation affecting the practice of medicine and the payment for hospital and medical services through voluntary or compulsory forms of insurance; and

WHEREAS, There appears in the report of the Proceedings of the National Health Conference, recently held in Washington, the suggestion, from high authority, that the state of Wisconsin might well be the proving ground for the radical changes in medical practice voiced before that conference; and

WHEREAS, It costs the relatively few physicians of the state of Wisconsin, or any other state society similarly threatened, a disproportionate amount to investigate claimed inadequacies in medical care prevailing therein, or to experiment with methods appearing to be suited to the correction of such inadequacies; and



WHEREAS, It seems wise, that, if such inadequacies are found to exist and if it appears proper that some new method must be devised to provide for the correction of any inadequacy so found, the development of those new methods should have the benefit of the knowledge and understanding peculiar to those engaged in the practice of medicine; therefore, be it hereby

*Resolved*, That the Board of Trustees of the American Medical Association be and hereby is authorized in its discretion to lend aid of the American Medical Association either in finance or in service to such studies; and be it further

*Resolved*, That the Board of Trustees of the American Medical Association be and hereby is authorized in its discretion to lend the aid of this Association either in finance or in service to any trial efforts at change as may be proposed by any of its constituent state units and as may in its judgment seem worthy of such aid.

#### Addresses of Representatives of the National Medical Association

On motion of Dr. Hilton S. Read, New Jersey, seconded by Dr. Arthur J. Bedell, Section on Ophthalmology, and carried unanimously, a representative of the National Medical Association was invited to address the House.

##### ADDRESS OF DR. ROSCOE C. GILES, CHICAGO

Dr. Hilton S. Read, New Jersey, presented Dr. Roscoe C. Giles, Chicago, who addressed the House as follows:

*Mr. Chairman, Members of the House of Delegates of the American Medical Association:*

Unfortunately I am not now president of the National Medical Association; I am a past president of the association, but I am here with Dr. Roberts, an ex-president, and Dr. Clarence Payne of Chicago, a member of our Commission on Tuberculosis, by courtesy of the House as the representatives of the National Medical Association. Our organization is an organization which is the mouthpiece for approximately 5,000 colored physicians in America. Many of our men in the North are members of the American Medical Association. We regret that it is not possible for all of our members throughout the entire country to be members of your august body. We are very deeply interested in this subject of medical economics. At our last session, in our convention held at Hampton, Va., August 15-19 of this year, we were visited by some representatives of the federal government with certain plans which were proposed to be introduced at the coming session of Congress which if enacted would mean the initiation of state medicine in America.

It was pointed out to us that there were 40,000,000 people in America who are unable to provide adequate medical service for themselves, that of that 40,000,000 there are 6,500,000 who are members of our race in the rural districts of the South. It was furthermore pointed out to us that we had little or nothing to expect from organized medicine, that for our own self preservation it might be necessary for us to swallow wholeheartedly this plan of the federal government.

Our Executive Committee and our House of Delegates considered the matter very seriously and we arrived at the very definite conclusion that there are no insurmountable fundamental difficulties in the field either of medical economics or of professional relationships between the majority and minority groups which cannot be amicably settled within the ranks of organized medicine. Therefore, in accepting the suggestions that were made to us that we might consult certain departments of the federal government whose forces are now arrayed against organized medicine, we chose to walk in and present ourselves a few days ago before your distinguished body in session and to there make certain requests and to make certain definite statements, some of which I shall here and now repeat.

The plight of the colored physician in America has been very pitiful. I will not take the time to rehearse all of those things. You men who are teachers in our universities throughout the country know these as well as we do. The thing that has impressed us greatly recently has been the fact that under the Emergency Relief Act so far colored physicians throughout the United States as a whole have not been permitted to take care of colored patients, thus violating a fundamental principle of your great organization, the free choice of physician by patient.

By that same token we have also been prohibited from sharing, as we should like to share, in the provisions for the control of venereal disease throughout this country. We believe that those are problems which can be and will be worked out and we hope will be worked out during your deliberations here.

We are vitally interested, as you are, in all these public health problems. We would like, if permitted, to work hand in hand with you on these matters. It is safe to say, as we said last night, that as no man in America is safe unless the humblest citizen is safe, so is it equally true that no physician in America is safe so far as social security is concerned until the humblest physician has been protected.

We therefore appear before your organization with the request that, if you can see your way clear to do so, you again enunciate the doctrine you have already done of the free choice of the physician by the patient, and, furthermore, to be more specific, that the Negro physicians be permitted anywhere in America to take care of Negro patients if those patients so desire.

We would like to further emphasize that, acting along those principles which were adopted by us in convention, we have decided to go along with you in every way humanly possible, because we know the situation. We have had an opportunity to see socialized medicine in Europe. Dr. Roberts, a distinguished member of this committee, studied it in England, Dr. Payne studied it in France and I have had an opportunity to study it in Vienna for seventeen and a half months, and I am very sure that none of us would like to see the conditions that obtain in Europe at the present time, and which obtained there at the time I was a student in the University of Vienna.

Men who are specialists in that particular city got 50 cents per patient, and the average physician worked for about 10 groschens, or about 7 cents a patient. It was a rare thing for them ever to eat meat; they could not afford to buy it.

If we have socialized medicine in America, I am very sure, as you must be sure, that the standards of medical practice will degenerate, that the pay of physicians will not be adequate for them to keep up with their educational facilities and post-graduate study and the patients again will suffer as they have suffered in Europe.

Therefore, in conclusion may I say that we lend to you our support and our sympathies in the struggle that you have against the forces arrayed against you and promise you that so far as humanly possible we will give you our undivided strength.

##### ADDRESS OF DR. CARL G. ROBERTS, CHICAGO

It was moved by Dr. W. F. Braasch, Minnesota, that the House extend the same privileges of the floor to the other representatives of the National Medical Association present if they so wished. The motion was seconded by Dr. Walter R. Steiner, Connecticut, and carried unanimously.

*Mr. Speaker and Officers and Members of the House of Delegates:*

As an additional member of the committee representing the National Medical Association, I wish to supplement and to further emphasize the remarks that have been made by our chairman, Dr. Giles. We want to bring to you the good will of the National Medical Association and to assure you that this is a momentous event when we show to the outside world through our reception here by your gracious and distinguished body that whatever difference in point of view may exist internally in the ranks of medicine, to those forces that are arrayed against us that are seeking to disintegrate organized medicine we present a united front of opposition, that there are no problems, as has just been said, which are so insurmountable or so difficult that they cannot be solved amicably within the ranks of organized medicine.

As I heard Dr. Snyder present his plan here this morning, I wondered if he was thinking, as I was thinking, in amazement at the plan that was presented at the Planning Committee of the Republican Party held recently in Chicago, where we were present not as partisan politicians but as invited guests to represent our several and component societies; we heard

presented there a deal that surpassed the New Deal, a proposal to socialize medicine completely from top to bottom. I wonder whether those of you who were present listened with the same amazement with which the members of the National Medical Association listened. I assure you that we know definitely, as we told them on that particular occasion, that we know what we want concretely and what we don't want, and one thing that we do not want is any socialization of medicine, and I want to assure you gentlemen in whose hands the fate and destiny of the American Medical Association lies, that we are quite willing to subscribe to whatever you decide upon on this occasion, that we believe, as you do, that the fate of medicine in America, that the fate of the health problem so far as it affects the laity, is best put into the hands of those who are trained especially to take care of them, in other words in the hands of the American doctor and the American dentist, and we believe with confidence in your sense of fair play and in your sense of justice and in your ability and your wisdom to see to it that those handicaps which have been mentioned to you, under which we labor, will be adjusted and removed, because we feel that you will agree with us that the health of one tenth of this population, who are Negroes, in the final analysis must lie largely in the hands of the Negro doctor, and as long as that minority which has the highest rates of morbidity and mortality in these preventable diseases is a drag on the health situation of America, so long must we be prepared to meet it.

Again, in conclusion, we want to thank you on behalf of our association, which appreciates more than you can know this gesture of good will. I have just received this afternoon a letter from our president in which he has answered a copy of an attack that appeared as an editorial in a newspaper last week on both the American Medical Association and the National Medical Association, and that letter of his will be published in that paper this week, an answer to those forces that are inviting us to put our fate in the hands of propagandists who use a system so often used when they want to divide a house against itself, by laying the matter in the hands of outsiders. We propose to rely on the members of this Association. There is no section and no division line in friendship or medical principles regardless of race involved, and we propose to march forward with you in all that is best for American medicine if you will permit us to do so.

ADDRESS OF DR. CLARENCE H. PAYNE, CHICAGO

*Mr. Chairman and Members of the House of Delegates:*

The previous speakers have laid before you most of the things that have been close to our hearts, but I may add this: that it was the consensus of opinion of the men from Texas and the men from all sections of this country that you stimulate and advance the health and the protection of the Negro patient in the Southland as well as in the Northland by affording us the courtesy and the dignity of respect that you have today. We wish to add that in their involvement of this question they felt that it brought itself down in medical economics to the recognition of the patient and physician, that if we considered all our problems from this angle most of them would be solved, because wherever we have a separation of that ideal we have always had failure. We have felt that we needed to inform the government that we regarded Americans as divided, for practical purposes, into three classes: one class able to pay for any amount of hospital and medical care, and they certainly should not be interfered with by anybody; the middle group of course needing some supplementary aid, probably, but that aid has always been able to be worked out by American initiative, and we felt that the hospitalization plan as worked out here in Chicago, if it were made more comprehensive, could extend to all employed persons in the United States, operating by private enterprise and supervised by medical boards so that any mistakes in its operation could be corrected, and that would afford them a solution and help them to meet their problems; in regard to the indigent we felt that here too the patient and physician relationship should exist, and that there should of course, if necessary, be federal subsidy but that in the subsidy of these patients it should be also supervised by medical commissions, whether they be state or whether they be under the

head of your American Medical Association. In that way, rather than being exploited, the patients and the physicians of this country would reach an amicable settlement of all their difficulties.

Those are the general principles on which we felt that our case would rest and that we would wait on you for guidance in the working out of those details which are necessary to arrive at a proper solution.

I thank you for this privilege.

#### Action of Medical Society of Virginia

Dr. Walter B. Martin, Virginia, presented the following statement, reading the amendment therein more as his own personal view, all of which was referred to the five divisions of the Reference Committee on Consideration of the National Health Program:

A special meeting of the Council of the Medical Society of Virginia was held on September 8 to confer with its delegates to the American Medical Association with regard to the proposed program of the National Health Conference, the subject for discussion at a special meeting of the House of Delegates of the American Medical Association in Chicago, on September 16.

The following resolution, with amendment, was adopted:

1. The cost of medical care to the indigent is an obligation of the entire citizenry and should be met by equitable public taxation.
2. The low income group needs and should have assistance in meeting the costs of medical care.
3. Any program for the extension of medical facilities should be directed by the medical profession as the group best qualified by experience and training; and, therefore, the Council of the Medical Society of Virginia requests the House of Delegates of the American Medical Association to cooperate with all agencies, private or governmental, local or federal, in every effort to make available complete medical facilities to all citizens regardless of economic status, provided the control and direction of such efforts be kept in the hands of the medical profession as the only group qualified by experience and training to direct such activities.

*Amended to include the following: "with due consideration and in accordance with resolutions presented by the Medical Economics Committee of the Medical Society of Virginia."*

While your committee is fully conscious of the desirability of extending medical care to all those that are in need of such care, we are persuaded that the preservation of medical freedom is of more importance to the present and future welfare of our people than any other consideration.

We are opposed to the recommendation of the National Health Conference for the following reasons:

1. That no grave national emergency exists from the standpoint of need for medical service. The statement that one third of our population is without proper medical care is contrary to common knowledge and cannot be supported by actual figures based on any adequate survey.
2. That we deny the health of the individual is a concern of government except so far as that individual's state of health menaces the general welfare. Provision should be made for the medical care of the indigent sick by local governments, supplemented in certain poor communities by state or federal aid.
3. That government is properly concerned with public health measures that have to do with the prevention of communicable diseases, with sanitation, industrial hazards and such like conditions that have effect on the general welfare. Most of these measures can best be directed by local government units, certain ones by the individual states, and a few by the federal government. In certain instances international cooperation is required. It is our firm conviction that the line of demarcation between the functions of these several political units should be preserved and that the concentration of preventive health work in Washington would be disastrous in its consequences.
4. That we are satisfied the creation of a huge fund to be controlled and expended by an agency of the federal government for medical education, endowment of research institutions, preventive medicine, medical relief work and the subsidizing of practitioners would destroy medical independence and, eventually, medical progress. In an undertaking so vast, political influence would soon become paramount. This influence would make itself felt not only in those departments concerned

in the distribution of medical service but in public health projects, teaching institutions and research laboratories. We do not believe that there is any individual or any agency capable of administering so large a trust or with ability sufficiently great to enable him or it to see and understand the various factors that enter into the problem of disease prevention and medical care throughout the entire country.

#### Report of Reference Committee on Rules and Order of Business

Dr. Edward R. Cunniffe, Chairman, presented the following report, and the procedure therein recommended was adopted on motion of Dr. Cunniffe, seconded by Dr. Arthur J. Bedell, Section on Ophthalmology, and carried:

Your Reference Committee on Rules and Order of Business recommends that the introduction of new business at this session be limited to 11 o'clock tomorrow morning unless by unanimous consent of the House, and that the first order of business in the morning be the receiving of the reports of reference committees, to be followed by the introduction of new business up to 11 a. m., unless by unanimous consent of the House.

#### Representatives of American Dental Association

On motion of Dr. E. L. Henderson, Kentucky, seconded by Dr. A. T. McCormack, Kentucky, and carried unanimously, the representatives of the American Dental Association were invited to address the House, but Dr. H. B. Pinney, secretary of that organization, stated that they had nothing to offer.

On motion, duly seconded and carried, the House adjourned at 3:50 p. m., to meet Saturday, September 17, 1938, at 9:30 a. m.

### Second Meeting—Saturday Morning, September 17

The House of Delegates was called to order at 9:50 a. m., Saturday, September 17, by the Speaker, Dr. H. H. Shoulders.

#### Report of Reference Committee on Miscellaneous Business

Dr. W. H. Seemann, Chairman, presented the following report:

1. A Plan for Publicity Against Regimentation of Physicians: This communication is a very clear and informative statement of a plan devised and carried out in seven counties in West Virginia, a plan well worth studying by our component societies. Especially noteworthy is the emphasis placed on the importance of each and every physician constantly and persistently carrying on a campaign of education among his individual patients. There is no definite resolution proposed in this communication. The committee again commends the work of the Parkersburg Academy of Medicine to the consideration of our members but recommends no other action by the House at this time.

2. Resolution on Change of Medical Care for the People: This resolution embodies a proposed change in the wording of Section 4 of Article I of Chapter III of the Principles of Medical Ethics of the American Medical Association so that it will read as follows:

SEC. 4.—Solicitation of patients by physicians as individuals, or collectively in groups, by whatsoever name these be called, or by institutions or organizations, whether by circulars or advertisements, or by personal communication, is unprofessional; provided, however, that solicitation of patients by a constituent state association or its component medical societies, acting singly or in groups, when said solicitation of patients is of an impersonal character and is done in the name of the aforesaid constituted unit of organized medicine and for the promotion of medical service plans controlled by such constituted units and designed to give more adequate medical care and service to citizens of certain stipulated income classes, and when such plan or plans shall have been approved by the proper constituent state association, shall be permissible and shall not be construed as unprofessional.

The proponents of this resolution have convinced the reference committee that an emergency exists and that any undue delay in the adoption of this resolution might be prejudicial to the best interests of the public and organized medicine.

Your reference committee, finding no established rule contrary to such action, recommends the adoption of this resolution.

3. Resolutions on Public Announcement of Plans Recommended by House of Delegates: These resolutions embody a request that the American Medical Association immediately

engage in an elaborate publicity campaign to be financed by the said Association from its own funds with aid of voluntary contributions.

It developed in the discussion on these resolutions that the publicity now enjoyed by the American Medical Association is far greater than imagined by the average member; that embarking on such an enterprise as suggested at this time might be hazardous and certainly gives no promise of returns commensurate with the costs, and that the treasury of the American Medical Association could hardly stand the strain of such costs.

Your committee recognizes the brave and loyal sentiments which actuated the proponents but believes that the best disposition of the resolutions is to refer them to the Board of Trustees for such action and disposition as it may find feasible.

Respectfully submitted.

W. H. SEEMANN, Chairman.  
CHARLES B. REED.  
MCLAIN ROGERS.  
H. G. HAMER.  
FELIX J. UNDERWOOD.

The first and third sections of the report of the reference committee were adopted on motions of Dr. Seemann, duly seconded and carried.

The second section of the report was referred to the Judicial Council on motion of Dr. A. T. McCormack, Kentucky, seconded by Dr. Samuel J. Kopetzky, New York, and carried after discussion.

The report of the reference committee was adopted as a whole, with the exception of the second section, which had been referred to the Judicial Council, on motion of Dr. Seemann, seconded by Dr. A. T. McCormack, Kentucky, and carried.

#### Report of Reference Committee on Credentials

Dr. Deering G. Smith, Chairman, presented the following report, which was adopted on motion of Dr. Smith, seconded by Dr. William H. Myers, Georgia, and carried:

The Reference Committee on Credentials reports that, out of a possible registration of 174 delegates, 165 have been registered at this special session.

#### Roll Call

It was moved by Dr. A. T. McCormack, Kentucky, seconded by Dr. S. J. Kopetzky, New York, and carried, that the House dispense with the roll call.

On motion of Dr. Samuel J. Kopetzky, New York, seconded and carried, the House recessed for thirty minutes to give reference committees time to prepare their reports.

#### Report of Reference Committee on Reports of Officers and Board of Trustees

Dr. Terry M. Townsend, Chairman, presented the report, which is herewith submitted as amended:

1. *The Address of the Speaker:* After narrating the difficulties which have beset the profession during the last few years, the Speaker points out the responsibilities of this House of Delegates. Your committee commends him for accentuating the importance of the House of Delegates as a forum to which every medical problem may be presented with the assurance of its calm consideration and wise disposition. He reiterates the fundamental importance of the ten principles or commandments already established in the consideration of any question involving the distribution of medical care.

2. *The Address of the President:* Seldom is it the privilege of our deliberative assemblies to have presented to them so clear and convincing an exposition of principles related to the subjects under discussion and couched in such scholarly diction.

The President's defense of the traditional ethics of the profession serves again to emphasize how basic they are in the maintenance of our professional standards, and his concern that all plans be measured in terms of results in morbidity and mortality indicates the principal criterion which should be applied.

He points to the indefiniteness of the National Health Program and the absence of opportunity for the presentation of alternative proposals or the detailed discussion of any part of the plan, the one agreement being the need for a Cabinet office of health and medical service. Your committee commends his clear definition of the relation between the physician and

the indigent and between the physician and the mutual benefit institution and the maintenance of the right of the physician to determine the conditions of his service. Above all your committee firmly supports his refutation of the radical speakers' charges that we oppose changes from the desire for more and more money, which he characterized as "an outrageous misstatement of our attitude."

He forcibly presents the fundamental tenet, applicable to the problems now before this body, opposing: (1) the disposal of professional services under conditions preventing adequate service, and the disposal of professional services to the financial profit of lay bodies, as being against sound public policy; (2) all meddling in medical economics consisting of vague plans for the indigent and quasi-indigent; (3) making the distribution of medical services a political football. He favors: (1) plans now carried on under the auspices of component medical societies, provided these plans are in accord with the principles and policies adopted by the American Medical Association, with a view of securing wider distribution of medical service; (2) group hospital insurance with proper safeguards to the physician and the patient; (3) suitable care for the indigent by municipal, county, state and federal institutions; (4) the principle of insurance when nonpolitically managed and when the funds are not dissipated among employees of the organization not directly concerned with rendering the service.

3. After commenting on the mutual confidence and respect engendered in the physician-patient relation, the President discusses the unfair picture painted by speakers at the National Health Conference. They depicted us as a nation one third ill fed, housed and cared for in health, dying in numbers for lack of our services. Factual knowledge to check on such statements is now in process of accumulation. Physicians everywhere are urged to return promptly the questionnaire prepared by the American Medical Association. Only by the evidence so obtained can your officers be in a position to establish the actual facts. Finally, the President again calls attention to the fact that the long established principles and policies of the American Medical Association do not preclude expansion of medical care to the mass of the underprivileged when their status is so established.

4. *The Address of the President-Elect:* Our President-Elect in his brief but sententious address uses no uncertain terms in dealing with recent widespread unfair criticism of the medical profession. He is to be recommended for the straightforward manner in which he attacks the hostile program apparently emanating from unfriendly sources. He details a few of the numerous sacrifices which are continually being made by the medical profession without thought for recompense and which are apparently overlooked by carping critics.

Not only does he call attention to economic insufficiency as a common cause of ill health but he refutes a favorite argument that widespread unemployment is based on lack of medical needs. He calls attention to the fact that the medical profession is voluntarily responsible for the social elements of the healing arts. He cites our medical publications as examples of the devotion to scientific medicine and devoid of selfish interest. In fact, he states that "never at any time, in any way, have our activities been motivated by selfish purposes." On the eve of this epoch-making session of the House of Delegates he points out that the one interest of this body is whether the proposals will contribute to the prevention of disease, prolongation of life and the alleviation of suffering, and he urges us to oppose doctrines which would eventually lower the standards of medical service. He emphasizes the fact that no one plan can meet the needs of every section of the country and makes it plain that no plan can be successful without the wholehearted cooperation of the medical profession. He ends with the warning that it is our plain duty to see that the structure of American medicine is not wrecked.

5. *Report of the Board of Trustees:* Attention is directed to the fact that this is the third time in history that the House of Delegates has been called to a special session. The report described the circumstances under which the National Health Conference at Washington in July was held. It was intimated that the proposals resulting from this conference will be the

basis for presenting legislation to the next Congress importantly affecting medical practice. The chairman of the Board calls attention to the responsibility placed on the members of this House of Delegates since we must formulate a policy for immediate needs as well as future exigencies.

Your reference committee highly commends the Board of Trustees for its willingness to submit to investigation by any authorized agency on the nature of its organization, work, conduct and activity. Firm in a belief in the probity of our officers, and confident of their adherence to established federal law, your reference committee recommends that, in the event of an indictment, this House of Delegates give full support to the Board of Trustees in defending such litigation to the utmost, with every means in its power, exhausting, if necessary, the last recourse of distinguished legal talent, to establish the ultimate right of organized medicine to use its disciplines to oppose types of contract practice damaging to the health of the public.

6. Your committee has studied with interest the action of the Board of Trustees in the matter of the Social Security Act and heartily commends the action of the Board. It recommends that this House of Delegates assure the Trustees of their full support in all efforts to establish the position of the American Medical Association as a scientific and educational organization.

7. *Resolutions Requesting Aid in Finance or in Service:* Your reference committee views with sympathy this request and listens with interest to its proponents. It is of the opinion that it is unwise to suggest any change of policy in this regard to the Board of Trustees and recommends that the request be referred to the Board of Trustees for its consideration.

8. *Resolutions on Appointment of Committee to Study Data and Plans:* These resolutions presented by the delegates from the state of Mississippi relative to the appointment of a joint committee by the President of the United States and the President of the American Medical Association in cooperation with the Board of Trustees meets with the full approval of your reference committee.

Respectfully submitted.

TERRY M. TOWNSEND, Chairman.  
WILLIAM F. BRAASCH.  
E. L. HENDERSON.  
S. P. MENGEL.  
CHARLES W. ROBERTS.

The first and second sections of the report of the reference committee were adopted as amended, on motion of Dr. Townsend, duly seconded and carried after discussion.

Sections 3 to 7, inclusive, of the report of the reference committee were adopted on motions of Dr. Townsend, duly seconded and carried.

The eighth section of the report of the reference committee was laid on the table for the time being, on motion of Dr. S. J. Kopetzky, New York, seconded by Dr. Burt R. Shurly, Section on Laryngology, Otology and Rhinology, and carried.

The report of the reference committee was adopted as a whole, with the exception of the eighth section, which had been laid on the table, on motion of Dr. Townsend, seconded by Dr. John Z. Brown Sr., Utah, and carried.

#### Communication from the National Medical Association

Dr. Hilton S. Read, New Jersey, requested unanimous consent from the House for the presentation of the following communication from the National Medical Association, which was granted:

Chicago, Illinois,  
September 16, 1938

We, the accredited delegates from the National Medical Association, wish to express our deep appreciation of the gracious courtesies of the officers and delegates of the American Medical Association.

As a matter of record, and in order to present a completely unified front of organized medicine against any encroachment on its prerogatives, we submit the following proposals:

1. That all classes of American citizens have a free choice of their physician.

2. That organized medicine rededicate itself to the maintenance of the physician-patient relationship.

3. (a) That the lower income groups be assisted in bearing the heavy cost of hospitalization by means of a nonprofit hospitalization plan, preferably under private control, endorsed and supervised by properly delegated bodies of organized medicine.

(b) That this plan be comprehensive enough to permit any and all regularly employed citizens of this income class to obtain its benefits.

4. (a) That the cost of medical and hospital care of the indigent be subsidized by the city, state or federal governments, singly or conjointly.

(b) That the operation of such indigent care shall be at all times subjected to the closest scrutiny by the properly delegated representatives of organized medicine.

(c) That wherever such medical or hospital care is operative, and organized medicine, through its national or local organizations collaborates in furnishing such medical or hospital care, ample and proportionate provision shall be made for the participation in such medical and hospital care by all members of organized medicine, without regard to race or creed.

5. That in those states or localities where there is not now provided opportunities for Negro physicians to become members of branches of the American Medical Association, the local branches of the National Medical Association be recognized for such physicians as a component part of organized medicine and shall thereby receive the opportunity of engaging in all activities, responsibilities and emoluments accruing therefrom, having thereby the freedom to practice on the members of their own group.

6. That in order to promote a better understanding and cooperation among the physicians of America there be appointed properly delegated committees, annually, to act as liaison and coordinating bodies from the American Medical Association and the National Medical Association.

7. That the American Medical Association take cognizance of the need of the colored citizens for increased hospital facilities, particularly tuberculosis hospitals.

8. That the American Medical Association feel welcome and free at any and all times to assist and suggest improvement in the standards of medical and hospital practice of the constituent and national bodies of the National Medical Association, and shall provide opportunities of expression for any just grievances that may arise from the National Medical Association.

Respectfully submitted.

ROSCOE C. GILES, M.D., Chairman.

CARL G. ROBERTS, M.D.

CLARENCE H. PAYNE, M.D.

This communication was referred to the Reference Committee on Consideration of the National Health Program.

#### Statement from Reference Committee on Consideration of the National Health Program

Dr. Walter F. Donaldson, Chairman, stated that the chairmen of the five divisions of the Reference Committee on Consideration of the National Health Program were at work on the general recommendations submitted by each division and that the reference committee suggested that in the meantime a member of each division read to the House of Delegates for information and discussion but not for action the report of the respective division of which he is a member.

These reports were read by Drs. A. A. Walker, Alabama, for Division 1; Holman Taylor, Texas, for Division 2; E. H. Skinner, Section on Radiology, for Division 3; John H. Fitzgibbon, Oregon, for Division 4, and Henry C. Macatee, District of Columbia, for Division 5.

The House recessed at 12:45 p. m., to meet at 2 p. m., on motion of Dr. A. T. McCormack, Kentucky, seconded by Dr. J. E. Paullin, Section on Practice of Medicine, and carried.

## Saturday Afternoon, September 17

The House reconvened at 2:10 p. m., Saturday, September 17, with Dr. H. H. Shoulders, Speaker, presiding.

### Report of Judicial Council

Dr. George Edward Follansbee, Chairman, presented the following report, which was adopted on motion, duly seconded and carried:

This is a special meeting of the House of Delegates called on the recommendation of the Board of Trustees to consider matters pertaining to the recent National Health Conference and such others as may be referred to it by the Board of Trustees.

The subject of the amendment of the Principles of Medical Ethics is not included in the matters for which this special session was called nor has it been referred to this House by the Board of Trustees, for which reason the Judicial Council recommends that no action be taken on the resolution introduced by Dr. Charles A. Dukes in behalf of the California delegation.

### General Discussion

Dr. H. H. Shoulders, Speaker, declared the next order of business to be the discussion of the tentative reports of the subcommittees, which had been presented to the House previously for information and discussion but not for action.

#### DEFINITION OF THE TERM "MEDICALLY INDIGENT"

During the discussion, Dr. Michael A. Tighe, Massachusetts, moved that Division 2 of the Reference Committee on Consideration of the National Health Program be requested to define the term "Medically Needy" or "Medically Indigent." The motion was seconded by Dr. Charles B. Reed, Illinois. The Chairman ruled that since the motion was in the nature of a request to the reference committee for certain action by the committee if it saw fit to act, it was in order. The Speaker called for a standing vote and declared that the motion was adopted, there being 60 votes in favor of it and 56 opposed to it.

There was further discussion of the tentative reports, a short recess and then Dr. H. A. Luce, Chairman of Division 2 of the Reference Committee on Consideration of the National Health Program, presented a definition of the term "Medically Indigent" and moved its adoption. As amended, it reads:

A person is medically indigent when he is unable, in the place in which he resides, through his own resources, to provide himself and his dependents with proper medical, dental, nursing, hospital, pharmaceutical and therapeutic appliance care without depriving himself or his dependents of necessary food, clothing, shelter and similar necessities of life, as determined by the local authority charged with the duty of dispensing relief for the medically indigent.

The motion was seconded by Dr. Horace J. Brown, Nevada, and the Speaker ruled that the adoption of the definition was out of order unless the definition was incorporated into the report of the committee. During the discussion, Dr. E. H. Skinner, Section on Radiology, requested the section report of Dr. H. A. Luce, Chairman of Division 2, and was informed by Dr. Olin West, Secretary, that the reports of the various divisions had not been filed with the Secretary but were in the hands of the Reference Committee on Consideration of the National Health Program.

### Presentation of Dr. G. Harvey Agnew

Dr. Olin West, Secretary, announced that Dr. G. Harvey Agnew, Associate Secretary of the Canadian Medical Association, was in the audience, and Dr. H. H. Shoulders, Speaker, requested Dr. Agnew to come to the platform, to be presented to the House.

### Report of Reference Committee on Consideration of the National Health Program

Dr. Walter F. Donaldson, Chairman, presented the report of the reference committee, which, as amended, reads as follows:

Since it is evident that the physicians of this nation, as represented by the members of this House of Delegates convened in



special session, favor definite and decisive action now, your committee submits the following for your approval:

1. Under Recommendation I on Expansion of Public Health Services: (1) Your committee recommends the establishment of a federal department of health with a secretary who shall be a doctor of medicine and a member of the President's Cabinet. (2) The general principles outlined by the Technical Committee for the expansion of Public Health and Maternal and Child Health Services are approved and the American Medical Association definitely seeks to cooperate in developing efficient and economical ways and means of putting into effect this recommendation. (3) Any expenditures made for the expansion of public health and maternal and child health services should not include the treatment of disease except so far as this cannot be successfully accomplished through the private practitioner.

2. Under Recommendation II on Expansion of Hospital Facilities: Your committee favors the expansion of general hospital facilities where need exists. The hospital situation would indicate that there is at present greater need for the use of existing hospital facilities than for additional hospitals.

Your committee heartily recommends the approval of the recommendation of the technical committee stressing the use of existing hospital facilities. The stability and efficiency of many existing church and voluntary hospitals could be assured by the payment to them of the costs of the necessary hospitalization of the medically indigent.

3. Under Recommendation III on Medical Care for the Medically Needy: Your committee advocates recognition of the principle that the complete medical care of the indigent is a responsibility of the community, medical and allied professions and that such care should be organized by local governmental units and supported by tax funds.

Since the indigent now constitute a large group in the population, your committee recognizes that the necessity for state aid for medical care may arise in poorer communities and the federal government may need to provide funds when the state is unable to meet these emergencies.

Reports of the Bureau of the Census, of the U. S. Public Health Service and of life insurance companies show that great progress has been made in the United States in the reduction of morbidity and mortality among all classes of people. This reflects the good quality of medical care now provided. Your committee wishes to see continued and improved the methods and practices which have brought us to this present high plane.

Your committee wishes to see established well coordinated programs in the various states in the nation, for improvement of food, housing and the other environmental conditions which have the greatest influence on the health of our citizens. Your committee wishes also to see established a definite and far reaching public health program for the education and information of all the people in order that they may take advantage of the present medical service available in this country.

In the face of the vanishing support of philanthropy, the medical profession as a whole will welcome the appropriation of funds to provide medical care for the medically needy, provided, first, that the public welfare administrative procedures are simplified and coordinated; and, second, that the provision of medical services is arranged by responsible local public officials in cooperation with the local medical profession and its allied groups.

Your committee feels that in each state a system should be developed to meet the recommendation of the National Health Conference in conformity with its suggestion that "The role of the federal government should be principally that of giving financial and technical aid to the states in their development of sound programs through procedures largely of their own choice."

4. Under Recommendation IV on a General Program of Medical Care: Your committee approves the principle of hospital service insurance which is being widely adopted throughout the country. It is susceptible of great expansion along sound lines, and your committee particularly recommends it as a community project. Experience in the operation of hospital service insurance or group hospitalization plans has demonstrated that these plans should confine themselves to provision of hospital facilities and should not include any type of medical care.

Your committee recognizes that health needs and means to supply such needs vary throughout the United States. Studies indicate that health needs are not identical in different localities but that they usually depend on local conditions and therefore are primarily local problems. Your committee therefore encourages county or district medical societies, with the approval of the state medical society of which each is a component part, to develop appropriate means to meet their local requirements.

In addition to insurance for hospitalization your committee believes it is practicable to develop cash indemnity insurance plans to cover, in whole or in part, the costs of emergency or prolonged illness. Agencies set up to provide such insurance should comply with state statutes and regulations to insure their soundness and financial responsibility and have the approval of the county and state medical societies under which they operate. Your committee is not willing to foster any system of compulsory health insurance. Your committee is convinced that it is a complicated, bureaucratic system which has no place in a democratic state. It would undoubtedly set up a far reaching tax system with great increase in the cost of government. That it would lend itself to political control and manipulation there is no doubt.

Your committee recognizes the soundness of the principles of workmen's compensation laws and recommends the expansion of such legislation to provide for meeting the costs of illness sustained as a result of employment in industry.

Your committee repeats its conviction that voluntary indemnity insurance may assist many income groups to finance their sickness costs without subsidy. Further development of group hospitalization and establishment of insurance plans on the indemnity principle to cover the cost of illness will assist in solution of these problems.

5. Under Recommendation V on Insurance Against Loss of Wages During Sickness: In essence, the recommendation deals with compensation of loss of wages during sickness. Your committee unreservedly endorses this principle, as it has distinct influence toward recovery and tends to reduce permanent disability. It is, however, in the interest of good medical care that the attending physician be relieved of the duty of certification of illness and of recovery, which function should be performed by a qualified medical employee of the disbursing agency.

6. To facilitate the accomplishment of these objectives, your committee recommends that a committee of not more than seven physicians representative of the practicing profession, under the chairmanship of Dr. Irvin Abell, President of the American Medical Association, be appointed by the Speaker to confer and consult with the proper federal representatives relative to the proposed National Health Program.

Respectfully submitted.

WALTER F. DONALDSON, Chairman.  
WALTER E. VEST.  
H. A. LUCE.  
FRED W. RANKIN.  
FREDERIC E. SONDERN.

It was moved by Dr. Donaldson, seconded by Dr. Arthur J. Bedell, Section on Ophthalmology, and carried after discussion, that the first section of the report of the reference committee, dealing with Recommendation I on Expansion of Public Health Services, be adopted.

The second section of the report of the reference committee, referring to Recommendation II on Expansion of Hospital Facilities, was adopted as amended, on motion of Dr. Donaldson, seconded and carried after discussion.

Dr. Donaldson moved that the third section of the report, with reference to Recommendation III on Medical Care for the Medically Needy, be adopted. The motion was seconded by Dr. A. T. McCormack, Kentucky, and carried.

Dr. Donaldson read the fourth section of the report of the reference committee, dealing with Recommendation IV on a General Program of Medical Care, and moved its adoption. The motion was seconded by Dr. S. J. Kopetzky, New York. Many recommendations were offered by the delegates, after which Dr. Donaldson suggested that Dr. Fred W. Rankin, Chairman, and other members of Division 4 of the reference committee, together with those who offered the recommendations, retire for a few minutes to amend this part of the report.

On motion of Dr. Donaldson, seconded by Dr. S. J. Kopetzky, New York, and carried, the fifth section of the report, referring to Recommendation V on Insurance Against Loss of Wages During Sickness, was adopted.

The sixth section of the report of the reference committee, recommending the appointment of a committee under the chairmanship of Dr. Irvin Abell, President of the American Medical Association, was adopted on motion of Dr. Donaldson, seconded by several and carried after discussion.

After a short recess, Dr. Fred W. Rankin, Chairman of Division 4 of the reference committee, brought in an amended report, which after discussion and amendment was adopted on motion of Dr. Rankin, seconded by several and carried.

The report of the reference committee as a whole was adopted as amended, on motion of Dr. Donaldson, seconded by Dr. A. T. McCormack, Kentucky, and carried by a rising vote.

#### Committee to Confer and Consult with Proper Federal Representatives

Dr. H. H. Shoulders, Speaker, appointed the members of the Committee to Confer and Consult with Proper Federal Representatives, as follows:

Drs. Irvin Abell, President of the American Medical Association, Chairman; Walter F. Donaldson, Pennsylvania; Walter E. Vest, West Virginia; H. A. Luce, Michigan; Fred W. Rankin, Section on Surgery, General and Abdominal; Frederic E. Sondern, New York; E. H. Cary, Texas. Drs. Rock Sleyster, President-Elect, and Olin West, Secretary, were declared by the Speaker to be members of this committee, ex officio.

#### Address of Dr. Malcolm T. MacEachern

Dr. H. H. Shoulders, Speaker, presented Dr. Malcolm T. MacEachern, Associate Director of the American College of Surgeons, who addressed the House as follows:

#### *Mr. Speaker and Members of the House of Delegates:*

I do not want to take up your time, but I was rather pleased with the wording of the report as submitted, and I saw in it a good deal of solution to some of the problems without amplifying it or going into more detail than you have so stated. I said to my side partner there that I wouldn't try to explain these things much more because you have there the fine principles which can be worked out and I think can be worked out with utmost safety as far as I could interpret the report as it was read.

I believe the group hospitalization plans as they are set up and controlled by the medical societies and the hospital people under proper boards should be a very safe procedure and I think the extension will go on safely, and what you have said in addition to that struck me, on thinking it over as rapidly as I could, as a very good principle that you are advocating at present.

I would not try to look at some problems that might arise which will have to be settled by your organization as it is perfected.

#### Resolution on Expansion of Bureau of Medical Economics

Dr. E. H. Skinner, Section on Radiology, presented the following resolution, signed by several members of the five divisions of the Reference Committee on Consideration of the National Health Program, which was adopted on motion of Dr. Skinner, seconded by Dr. H. B. Everett, Tennessee, and carried:

WHEREAS, There is a demand among state and county medical associations for help and advice, for surveys and the development of local and state programs for the care of the indigent and low income groups of the people; therefore be it

Resolved, That it is the sentiment of this House of Delegates that it would heartily approve of an action by the Board of Trustees looking toward the sensible expansion of the Bureau of Medical Economics to accommodate the immediate and growing demand.

#### Expressions of Appreciation

Expressions of appreciation were extended to the Reference Committee on Consideration of the National Health Program, to each of its five divisions, to the staff of the American Medical Association and to the Speaker.

The resolutions from the Mississippi delegates, which had been laid on the table, were not taken up, because Dr. H. F. Garrison, Mississippi, stated that the report of the Reference Committee on Consideration of the National Health Program had adopted essentially the recommendations involved in the resolutions.

The House adjourned sine die at 4:45 p. m.

## OFFICIAL NOTES

### RADIO BROADCASTS

The fourth series of programs broadcast in dramatic form portraying fictitious but typical incidents of significance in relation to health by the American Medical Association and the National Broadcasting Company entitled "Your Health" will begin Wednesday, October 19, and run consecutively for thirty-six weeks. The program will be broadcast over the Blue network of the National Broadcasting Company each Wednesday at 2 p. m. eastern standard time (1 p. m. central standard time, 12 noon mountain time, 11 a. m. Pacific time).

These programs will be broadcast on what is known in radio as a sustaining basis; that is, the time is furnished gratis by the radio network and local stations and no revenue is derived from the programs. Therefore, local stations may or may not take the program, at their discretion, except those stations which are owned and operated by the National Broadcasting Company.

The programs to be broadcast in the first group, together with their dates and their topics, are as follows:

October 19. What Is Health?  
October 26. Growing Strong.  
November 2. Seeing and Hearing Well.  
November 9. Healthier Boys and Girls.

The following is a list of the stations connected with the Blue network of the National Broadcasting Company, but no assurance can be given as to how many of these stations will broadcast the program "Your Health":

#### Basic Blue Network

WJZ	New York	WEBR	Buffalo	KSO	Des Moines
WBZ	Boston	KDKA	Pittsburgh	KOIL	Omaha
WBZA	Springfield	WHK	Cleveland	WREN	Kansas City
WEAN	Providence	WSPD	Toledo	WLW	Cincinnati
WICC	Bridgeport	WXYZ	Detroit	WCKY	Cincinnati
WFIL	Philadelphia	WOWO	Fort Wayne	WSAI	Cincinnati
WBAL	Baltimore	WENR-WLS	Chicago	WRTD	Richmond
WMAL	Washington	KWK	St. Louis	WABY	Albany
WSYR	Syracuse	WMT	Cedar Rapids	WJTN	Jamestown, N.Y.
WHAM	Rochester	WTCN	Minneapolis	WLEU	Erie

#### Supplementary Facilities

WFEA	Manchester, N.H.	WFBC	Greenville	KVOD	Denver
WBRE	Wilkes-Barre	WVNC	Asheville	KLO	Orden
WSAN	Allentown, Pa.	WIS	Columbia	KIDO	Boise
WORK	York, Pa.	WCSC	Charleston	KGIR	Butte
WCOL	Columbus, O.	WJAX	Jacksonville	KPFA	Helena
WGL-WOVO		WFLA-WSUN	Tampa	KGHL	Billings
	Ft. Wayne	WIOD	Miami	KSEI	Pocatello, Ida.
WOOD	Grand Rapids	WMC	Memphis	KTFI	Twin Falls, Ida.
WBOW	Terre Haute	WSB	Atlanta	RGO	San Francisco
WGBF	Evansville	WBRC	Birmingham	KECA	Los Angeles
WIBC	Duluth-Superior	WJDX	Jackson	KEX	Portland, Ore.
KSOO-KELO		WSMB	New Orleans	KJR	Seattle
	Sioux Falls, S.D.	WALA	Mobile	KGA	Spokane
KANS	Wichita	WROL	Knoxville	KFBK	Sacramento
WTFR	Norfolk	WAVE	Louisville	KWG	Stockton
WPTF	Raleigh	WSM	Nashville	KMJ	Fresno
WSOC	Charlotte	WTMJ	Milwaukee	KERN	Bakersfield
		WIBA	Madison		

## CORRECTION

**New Officers of the Auxiliary.**—In the list of officers elected by the Woman's Auxiliary to the American Medical Association for 1938-1939, published on page 1109 of THE JOURNAL September 17, the name of the chairman of organization, Mrs. Frank N. Haggard, 615 East Olmos Drive, San Antonio, Texas, was inadvertently omitted.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

### ARIZONA

**Dedication of Hospital for Indians.**—The new \$450,000 building of the base hospital for Navajo and Hopi Indians, the Southern Navajo General Hospital and Sanatorium at Fort Defiance, was recently dedicated with Dr. James G. Townsend, Washington, D. C., director of health, U. S. Office of Indian Affairs, presiding. Dr. William W. Peter, medical director, Navajo-Hopi areas, Window Rock, spoke and Henry Taliman, chairman, Navajo Tribal Council, spoke for the Navajo tribe. A patriarchal ceremony by a representative of the Navajo medicine men preceded the dedication and official opening. E. R. Freyer, general superintendent of the Navajo Agency, officially opened the building. The old hospital is being used as a sanatorium for tuberculosis. The two buildings provide for 226 patients. The Navajo-Hopi reservation of 25,000 square miles is the largest of 199 Indian reservations in twenty-two states; it has a total population of about 45,000 Navajos and 3,000 Hopis. In this area there are ten hospitals with 344 beds and three sanatoriums with 129 beds. The hospital at Fort Defiance is to serve the entire Navajo-Hopi area through receiving difficult cases, maintaining a central laboratory service, training new appointees and by occasional area clinics and refresher courses. Dr. Paul C. F. Vietzke is medical superintendent.

### CALIFORNIA

**Plague Infection.**—According to *Public Health Reports*, plague infection was proved in a pool of thirteen fleas from seven chipmunks collected July 14 at Cedar Crest Resort in the Sierra National Forest, 2 miles west of Lake Shore, Huntington Lake, Fresno County.

**Personal.**—Dr. Jacob C. Geiger, health officer of San Francisco, has been honored by the king of Italy with the Cross of Cavaliere of the Order of the Crown of Italy "for services of distinction in the field of public health."—Dr. Frank F. Barham, Los Angeles, publisher of the *Evening Herald and Express*, has been elected president of the University of Southern California Alumni Association.

**Society News.**—Dr. Wilson Stegeman, Crescent City, addressed the Humboldt County Medical Society in Eureka August 1 on "Prevention of Postoperative Complications by Giving of Glucose by Mouth Before Operations" and Dr. Norman N. Epstein discussed syphilis.—At a meeting of the Alameda County Medical Association, Oakland, September 19 the speakers were Drs. Leon I. Oppenheimer on "Urinary Symptoms in Women"; Charles B. Fowler, "Fractures of the Elbow," and Karl J. Deissler, "Medical Shock."—At a meeting of the Los Angeles Society of Ophthalmology and Otolaryngology with the Research Study Club of Los Angeles September 26 the speakers were Drs. Warren A. Wilson and David A. McCoy on "The Problem of Scientific Terminology in Eye Diseases" and Dr. William S. Kiskadden on "Plastic Surgery in the Region of the Eye."

### COLORADO

**State Medical Election.**—Dr. John W. Ames, Denver, was chosen president-elect of the Colorado State Medical Society at its annual meeting in Estes Park September 8-10. Dr. Leo W. Bortree, Colorado Springs, was installed as president. Dr. John B. Hartwell and Dr. William A. Campbell Jr., both of Colorado Springs, were elected vice president and treasurer respectively. The next annual session will be held at Colorado Springs.

### FLORIDA

**Fifth Annual Clinical Conference.**—The Florida section of the Southeastern Surgical Congress conducted its fifth annual clinical conference at the Florida State Hospital, Chattahoochee, August 27. Participating in the program were:

- Dr. William R. Meeker, Mobile, Surgical Lesions of the Right Lower Quadrant Stimulating Acute Appendicitis.
- Dr. Walter R. Holmes, Atlanta, Cervicitis.
- Dr. Walter C. Jones Jr., Miami, Acute Pelvic Conditions Before and After Treatment.
- Dr. Thomas C. Davison, Atlanta, Clinical Examination of Surgical Patients.

- Dr. James B. McLester, Birmingham, Clinical Examination in Cases of Nutritional Disturbances.
- Dr. James G. Lyerly, Jacksonville, Operative Treatment of Involuntary Insanity of Agitation Type.
- Dr. Wilfred McL. Shaw, Jacksonville, Roentgen Ray in Diagnosis of Some Surgical Brain Diseases.
- Dr. Frederick W. Wilkerson, Montgomery, Medical Aspects of Gall-bladder Disease.

### ILLINOIS

**Society News.**—Dr. Edwin C. Ernst, St. Louis, discussed cancer before the Madison County Medical Society in Alton September 2.—Dr. Arthur E. Hertzler, Halstead, Kan., discussed the thyroid gland before the Sangamon County Medical Society in Springfield September 1.

**Venereal Disease Control Officer.**—Dr. Herman M. Soloway, Chicago, has been appointed venereal disease control officer of the state department of health. The newly created post was made possible by funds allotted to the state by the U. S. Public Health Service. Dr. Soloway graduated at the University of Illinois College of Medicine in 1922.

### INDIANA

**Building for State Board of Health.**—Plans are under way to construct a building for the state board of health at the Indiana University Medical Center, Indianapolis. The building will be a modern office and laboratory structure of reinforced concrete construction faced with light colored brick and trimmed with Indiana limestone to harmonize with other buildings in the medical center.

**Courses in Tuberculosis.**—Sanatoriums throughout the state will be used as teaching centers in the short courses in tuberculosis to be sponsored again by the Indiana Tuberculosis Association. One afternoon and evening will be devoted to the work in each location. The purpose of the course is to acquaint physicians with the recent progress in the treatment of tuberculosis. The courses, which will be made up of round table discussions, presentation of clinical material and demonstrations, will be held in the following places:

- St. Edward's Hospital, New Albany, November 16.
- William Ross Sanatorium, Lafayette, September 9.
- Sunnyside Sanatorium, Oaklandon, October 12.
- Boehn Lake Health Hiller, Indianapolis, October 12.
- Boehn Lake Health Hiller, Indianapolis, October 13.
- Boehn Lake Health Hiller, Indianapolis, October 18.
- Boehn Lake Health Hiller, Indianapolis, October 15.

**Committee to Study National Health Problems.**—Dr. Herman M. Baker, Evansville, president, Indiana State Medical Association, has appointed a committee to study the present national situation as it relates to the future practice of medicine. Members of the committee, which will submit a report to the house of delegates of the state association at the annual meeting October 4-6, are:

- Dr. Cleon A. ... chairman, executive committee.
- Dr. Carl H. ... member, executive committee.
- Dr. Herman M. ... president.
- Dr. Edmund ... Wayne, president-elect.
- Dr. Maynard A. Austin, Anderson, chairman of the council.
- Dr. Frank M. Gastineau, Indianapolis, bureau of publicity.
- Dr. Norman M. Beatty, Indianapolis, chairman, legislative committee.
- Dr. Oliver O. Alexander, Terre Haute, counselor, Fifth District.
- Dr. Walter C. McFadden, Shelbyville.
- Dr. Alfred H. Ellison, South Bend.
- Dr. Roscoe H. Beeson, Muncie.
- Dr. Jacob T. Oliphant, Farmersburg.

Ex officio members are Drs. Arthur F. Weyerbacher, Indianapolis, treasurer; Eldridge M. Shanklin, Hammond, editor of the state association journal, and Albert Stump, Indianapolis, attorney for the association.

### IOWA

**State Interprofessional Program.**—An interprofessional program will be held in Waterloo October 12 in conjunction with a meeting of the Iowa State Association of Registered Nurses. Varying views of the recommendations of the National Health Conference as they affect the professions will be presented. Right Rev. Monsignor Maurice F. Griffin, Cleveland, will discuss why the public will suffer if such a program is adopted.

**District Meeting.**—The fall meeting of the Iowa and Illinois Central District Medical Association will be held at the Blackhawk Hotel in Davenport October 7. Dr. Archibald L. Hoyne, Chicago, will speak on "Treatment of Some Common Contagious Diseases"; Dr. Charles G. Sutherland, Rochester, Minn., on "X-Ray Diagnosis and Interpretation," and Dr. Marius Nygaard Smith-Petersen, Boston, on an orthopedic subject. The motion picture "Diagnosis and Treatment of Syphilis" will be shown.

**Graduate Courses.**—In accordance with a new plan, representatives from each councilor district have been appointed to form a committee on postgraduate medical education to confer with and assist local physicians in selecting the type of graduate course they desire. In this way the speakers' bureau of the state medical society will be able to present courses planned by the physicians themselves. Courses covering various phases of medicine will begin early in October in West Union, Fort Dodge, Dubuque, Sheldon and Emmetsburg. Plans are under way also to offer refresher courses, which will be financed by federal funds.

### KANSAS

**Annual Registration Now Due.**—Physicians licensed to practice medicine in Kansas are required to renew their licenses annually between July 1 and October 1 and to pay a fee of \$1 to the secretary of the board of medical registration and examination. The secretary must strike from the register of licensed physicians the names of all physicians who fail to pay their annual registration fees as required by law. Physicians whose names are so removed may be reinstated by paying the secretary \$5 and submitting to him satisfactory proof of moral fitness.

### KENTUCKY

**Society News.**—Drs. Shelton Watkins and Adolph B. Loveman, both of Louisville, addressed the Jefferson County Medical Society, Louisville, September 19, on "Medical Treatment of Nasal and Sinus Infections" and "Mucous Membrane Lesions of Interest to the General Practitioner" respectively. —Dr. Karl N. Victor, Louisville, addressed the Louisville Eye and Ear Society September 8 on "Colds, Micro-Organisms and Vaccines." —Dr. William Barnett Owen, Louisville, addressed the Society of Physicians and Surgeons, Louisville, September 15 on "Intra-Articular Fractures of the Knee."

### MARYLAND

**Survey of Unregistered Births.**—A survey of unregistered births in two rural counties on the Eastern Shore of Maryland was completed June 30 by the federal division of vital statistics in cooperation with the state department of health. Field work was done by A. W. Hedrich, Sc.D., chief of the bureau of vital statistics in Maryland, and C. G. Bennett, field agent of the federal division. According to *The Registrar*, the objectives were to ascertain why certain births were unreported, to secure suggestions for improving birth registration, and to develop a pattern for future research of a similar nature. Three types of formal schedules were used in recording interviews. One type was for families in which unreported births had occurred; one was for physicians and another for local registrars. As far as the investigators were able to tell, nearly half of the unreported births investigated were attributed to forgetfulness or neglect on the part of physicians. The results of the survey showed that about one third of the physicians interviewed were beyond reproach in the matter of reporting. Only 10 per cent were very poor. According to the report, suggestions for the improvement of birth registration made by persons interviewed were as follows: that every birth be attended by a physician or licensed midwife; that every birth be registered by the attending physician or midwife; that each month physicians and midwives submit to the county health officer a list of all infants delivered during the month; that certificates be completed at the bedside, and that a more convenient size of certificate be adopted.

### MICHIGAN

**Society News.**—Dr. Harry J. Isaacs, Chicago, discussed jaundice before the Calhoun County Medical Society, Battle Creek, September 6. —Dr. Frederick A. Collier, Ann Arbor, addressed the Alpena County Medical Society July 28 in Alpena on surgery of the gastrointestinal tract.

**Health Conference.**—A health conference was held in East Lansing September 10, sponsored by the governor's study committee on social welfare relationships, the third of a series of assemblies. The meeting was held to "consider ways of having the government assist people to obtain through the practicing physicians a higher standard of medical care." The program included discussions of the following topics: purpose of the conference, preliminary report of committee on the medical needs of governmental relief clients, American Medical Association Survey in Michigan, economic factors of medical care, the national health picture, future plans, expansion of health services, medical care for the indigent, and insurance. The speakers included Governor Frank Murphy; Dr. Don W.

Gudakunst, Lansing, state health commissioner; Dr. Louis Fernald Foster, Bay City, secretary of the Michigan State Medical Society; William J. Norton, chairman, state welfare commission; Dr. Clifford E. Waller, assistant surgeon general, U. S. Public Health Service; Henry F. Vaughan, Dr. P.H., health commissioner of Detroit; Howard Hunter, regional director, WPA; Dr. Raymond G. Tuck, Pontiac, director, emergency relief administration of Oakland County; Dr. Ralph H. Pino, Detroit, chairman, committee on distribution of medical care, state medical society; Dr. Sarah S. Deitrick, field consultant, Children's Bureau; Fred Hoehler, director, American Public Welfare Association; Dr. Thomas K. Gruber, superintendent, Eloise State Hospital; Dr. Henry Cook, Flint, at that time president of the state medical society, and Albert E. Meder, Detroit. Others on the program were U. G. Rickert, D.D.S., Ann Arbor, and Dr. Robert B. Harkness, Hastings, president and secretary respectively of the advisory council, State Department of Health; Fred R. Johnson, general secretary, Michigan Children's Aid Society; Harry Kelly, Grand Rapids, and Dr. Henry A. Luce, Detroit, then president-elect of the state medical society.

### MINNESOTA

**Graduate Courses at Continuation Study Center.**—Dr. William A. O'Brien, director of postgraduate medical education, University of Minnesota, Minneapolis, announces the following series of fall courses for the practicing physician:

Proctology, September 19-24.  
Diseases of the Genito-Urinary Tract, September 19-24.  
Diseases of Infancy and Childhood, September 26-October 1.  
General Medicine, October 10-15.  
Diseases of the Skin, October 31-November 5.  
Tuberculosis, November 14-19.

The fee of \$25 for each course does not include living accommodations. Licensed physicians outside the state may also register. Additional information may be obtained from Dr. O'Brien or J. M. Nolte, director of the Center for Continuation Study at the university. Courses to run from January 1 to June 30 will cover the following subjects: ophthalmology, diagnostic roentgenology, diseases of bones and joints, neuropsychiatry, general surgery, diseases of the blood and blood forming organs, obstetrics (not including gynecology) and gastro-enterology.

### NEBRASKA

**Personal.**—Seventy-five physicians attended a dinner in honor of Dr. Lincoln Riley, Wisner, in Norfolk, July 20, celebrating his fiftieth anniversary in the practice of medicine. Dr. Lucien Stark, Norfolk, was toastmaster and the speakers were Dr. John P. Lord, Omaha, Dr. Morris Nielsen, Blair, and George A. Eberly, Lincoln, associate justice of the Nebraska supreme court.

**Annual Registration Now Due.**—Physicians licensed to practice medicine in Nebraska are required by law to register with the Department of Public Welfare annually on or before October 1 and to pay a fee of \$1. A license expires if the licensee fails to register, but within the thirty days next following its expiration it may be revived by the payment of the registration fee and a penalty of \$1. If that is not done, an order of revocation is issued and thereafter the revoked license can be reinstated only on the recommendation of the board of examiners in medicine and on the payment of the renewal fees and penalty then due.

### NEW YORK

**Bacillary Dysentery in a Children's Camp.**—One hundred and thirty-eight children had a mild form of bacillary dysentery in an outbreak in a children's camp recently, *Health News* reports. Evidence of pollution of the camp water supply was found during the eight days of the outbreak and raw milk used as part of the milk supply was also suspected as a source of the outbreak. In most instances recovery occurred in twenty-four hours.

**Typhoid in a Trailer Tourist.**—A woman member of a trailer tourist party was found to be suffering from typhoid at a camp site near Beechwood recently. The woman, said to be a resident of Providence, R. I., was isolated at the Jamestown General Hospital and other members of the party were under observation August 29, according to a newspaper report. The party had previously camped at various places in New York and at the time of the report the origin of the infection had not been traced.

**Society News.**—Drs. Loftus Laramour Bryan and Harold H. Dodds, Marcy State Hospital, Marcy, addressed the annual joint meeting of the Syracuse and Utica academies of medicine

at a meeting September 22 on "Latest Insulin Treatment of Dementia Praecox" and "Myasthenia Gravis" respectively.—Dr. Howard S. Jeck, New York, addressed the Medical Society of the County of Rockland at its summer meeting July 13 on newer methods of diagnosis and treatment of urologic conditions.—Dr. Benjamin W. Seaman, Hempstead, addressed the Nassau Surgical Society in Hempstead September 12 on "The Evolution of Surgery."—Dr. Dean D. Lewis, Baltimore, addressed the Medical Society of Westchester County, White Plains, September 20 on "Effect of Ovarian Hormones on the Breast, Pathologically and Normally."

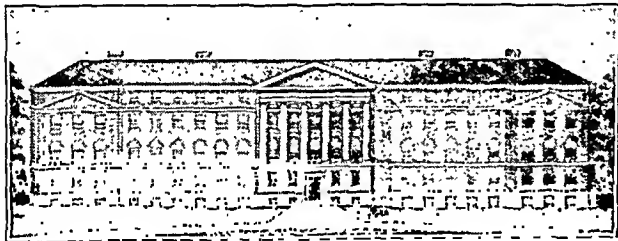
### New York City

**Symposium on Chronic Pulmonary Diseases.**—A clinical session of the Tuberculosis Sanatorium Conference of Metropolitan New York October 3 will be devoted to a symposium on "Sputum in Tuberculosis and Other Chronic Pulmonary Conditions." Speakers will be Drs. Harry C. Ballou, Montreal, Que., on "Physiologic Mechanism of Expectoration"; Max Pinner, New York, "Sputum in Tuberculosis and Chronic Pulmonary Conditions," and David T. Smith, Durham, N. C., "Fungi in the Sputum and Their Significance."

**Program for Pneumonia Control.**—The New York City Department of Health has announced a program for the coming pneumonia season, including scientific meetings, practical demonstrations and laboratory training. Each of the five county medical societies will have a meeting in November or December covering the important aspects of treatment with serum. Plans have been made with the cooperation of certain hospitals to hold informal bedside demonstrations for small groups of physicians under the leadership of the health department advisers, who will demonstrate the practical details of intravenous serum administration. Lectures and laboratory demonstrations have also been planned for laboratory directors and technicians. The cooperation of the health department and the medical societies in this program was arranged by a subcommittee of the Advisory Committee on Pneumonia Control for New York City.

### NORTH CAROLINA

**New Building at State University.**—Construction has begun on a new medical building at the University of North Carolina, Chapel Hill, with a PWA grant of \$400,000. The building will be five stories high, of a southern colonial style



New medical building.

of architecture. The first floor will have the administrative offices and quarters for the division of public health. Other floors will be divided among the departments of anatomy, biologic chemistry, pathology, pharmacology, physiology, bacteriology and public health. Most of the fifth floor will be taken up by air conditioned animal quarters. Laboratories will serve not only the medical school but the undergraduate and the graduate schools. There will also be library space for 40,000 volumes, a reading room, a lecture room with a capacity of 250 and smaller seminar rooms. Part of the PWA grant will be used to enlarge the university infirmary to give room for a charity clinic to provide instruction of medical students in physical diagnosis in their second year. Dr. William deB. MacNider is dean of the medical school.

### OHIO

**Hospital News.**—Mr. George P. Bugbee, assistant superintendent of the University of Michigan Hospital, Ann Arbor, has been appointed superintendent of the Cleveland City Hospital.

**Graduate Program in Canton.**—Four members of the faculty of the University of Pennsylvania School of Medicine, Philadelphia, will be the guest lecturers for the first annual Postgraduate Day of the Stark County Medical Society at the Courtland Hotel, Canton, October 12. The lecturers will be

Drs. Thomas Grier Miller, professor of clinical medicine; Isidor S. Ravdin, professor of surgery; Floyd E. Keene, professor of gynecology, and Baldwin H. E. W. Lucke, professor of pathology.

**Fall Series of Lectures.**—The Mahoning County Medical Society is sponsoring a series of lectures, which opened September 21 and will be given weekly until November 9. The speakers, all of Cleveland, are:

- Dr. Russell L. Haden, Treatment of Hemorrhagic Disease, September 21.
- Dr. Arthur Carlton Ernstene, Drug Treatment of Heart Disease, September 28.
- Dr. Ernstene, Management of Hypertension, October 5.
- Dr. Haden, Treatment of Anemia, October 12.
- Dr. Haden, Treatment of Leukemia, October 19.
- Dr. Everett N. Collins, Treatment of Peptic Ulcer, October 26.
- Dr. Collins, Management of Disorders of the Colon, November 2.
- Dr. Haden, Treatment of Arthritis, November 9.

### PENNSYLVANIA

**Hospital News.**—The Lions Club of McKeesport, aided by several other organizations, recently made a campaign for funds to buy a respirator for the McKeesport Hospital. The clubs raised \$10,224, it is reported, of which \$3,000 was paid for the respirator and expenses of the campaign and \$7,500 was set aside for upkeep and emergency aid for persons unable to pay for care.

**Fayette County Meetings.**—The annual fall clinic of the Fayette County Medical Society will be held at the Uniontown Hospital, Uniontown, September 29, with Drs. Louis Hamman, associate professor of medicine, and William F. Rienhoff Jr., associate professor of surgery, Johns Hopkins University School of Medicine, Baltimore, as the guest speakers. A meeting of the society was held September 1 at the Connellsville State Hospital, Connellsville, with Drs. Domer S. Newill and Lucian Dale Johnson, both of the hospital staff, as the speakers on "Teratoma Testis Abdominis" and "Peptic Ulcer" respectively.

### Pittsburgh

**Society News.**—The Allegheny County Medical Society met September 20 with the following speakers: Drs. Cyril F. Lauer on "Eye Lesions of Syphilis, Tuberculosis, Diabetes and Infective Endocarditis"; James R. Johnson, "Malignancies of the Uterus"; George J. Thomas, "Clinical and Laboratory Observations on Intravenous Anesthesia"; Wendell B. Gordon, "Recent Advancement in the Treatment of Heart Disease."

**Course in Industrial Hygiene.**—The postgraduate committee of the Allegheny County Medical Society and the department of industrial hygiene of the University of Pittsburgh School of Medicine have arranged a graduate course in industrial hygiene to be given at the medical school October 24-28. The first four days will be devoted to lectures by physicians and others on the university staff and associated with industrial firms in Pittsburgh as well as several out of town speakers. Problems to be covered include air pollution, physiologic effects of materials and processes commonly used in industry, physiologic effects of heat, effects of electricity on the human body and the study of human failure as a cause of accidents. Among the guest speakers announced are:

- Dr. William B. Fulton, director, division of industrial hygiene, state department of health, Harrisburg.
- Dr. Robert A. Kehoe, associate professor of physiology, University of Cincinnati.
- Dr. Roy R. Jones, surgeon, division of industrial hygiene, National Institute of Health, Washington, D. C.
- Commander Charles S. Stephenson, division of preventive medicine, Medical Corps, U. S. Navy, Washington, D. C.

The last day of the course will be devoted to visits to industrial plants, the Carnegie-Illinois Steel Company at Homestead, the Mine Safety Appliances Company, Pittsburgh, and the Westinghouse Electric and Manufacturing Company, East Pittsburgh. Registrations must be received by October 15, as the class is limited to forty-five physicians. The fee for the course is \$50.

### SOUTH CAROLINA

**Society News.**—Dr. Charles G. Spivey, Columbia, addressed the Ridge Medical Society August 15 in Johnston on "Symptoms of Heart Failure in Hypertension."—Dr. Robert R. Jones Jr., Durham, addressed the Darlington County Medical Society, Darlington, August 11 on plastic surgery.—Drs. Bernyrd C. McLawhorn and Thomas Parker, Greenville, addressed the Greenville County Medical Society recently on management of hypertensive patients and nephritis, respectively.—Dr. Hugh H. Young, Baltimore, addressed the Columbia



Medical Society September 12 on "Medical and Surgical Aspects of Diseases of the Prostate" and Drs. George H. Bunch and Lucius Emmett Madden, Columbia, on "Acute Epidural Abscess of the Cord."

## TEXAS

**Fort Worth Medical and Surgical Clinics.**—The Tarrant County Medical Society will present the Fort Worth Medical and Surgical Clinics September 27 at the Hotel Texas, Fort Worth. The speakers, who will give clinical lectures and conduct dry clinics, are: Drs. Arthur E. Hertzler, Halstead, Kan., John H. Musser, New Orleans, La., and Grandison D. Royston, St. Louis.

## UTAH

**Society News.**—Dr. Amos Christic, San Francisco, addressed a special meeting of the Utah County Medical Society, Provo, July 18 on the uses of sulfanilamide and on congenital syphilis. He also conducted a pediatric clinic July 20.

**State Health Association Meeting.**—The first annual meeting of the Utah State Public Health Association was held at the University of Utah, Salt Lake City, August 30-31. The speakers were Drs. Milton J. Rosenau, professor of epidemiology, University of North Carolina School of Medicine, Chapel Hill; Lyman L. Daines, dean, University of Utah School of Medicine, Salt Lake City; Frederick T. Foard, San Francisco, regional consultant, U. S. Public Health Service, and Edith P. Sappington, San Francisco, regional consultant, Children's Bureau. Dr. Louis E. Viko, formerly health officer of Salt Lake City, is president and Dr. Daines, president-elect. The association was organized Nov. 13, 1937.

## VIRGINIA

**State Medical Meeting at Danville.**—The sixty-ninth annual session of the Medical Society of Virginia will be held in Danville October 4-6 at the Hotel Danville. Speakers at the general sessions will be:

- Dr. William J. Mallory, Washington, D. C., Diagnostic Value of the Clinical Aspects of Digestive Diseases.
- Dr. Frederick A. Willius, Rochester, Minn., Effects of Protracted and Recurrent Congestive Heart Failure on the Liver.
- Dr. Robert Finley Gayle Jr., Richmond, Problem of Caring for the Mentally Sick in Virginia.
- Dr. Reuben F. Simms, Richmond, Value of Periodic Health Examinations.
- Dr. James Franklin Waddill, Norfolk, Clinical Manifestations of Acute Rheumatic Fevers: Age Incidence, Diagnosis and Treatment.
- Dr. Emmett Trible Gatewood, Richmond, Diagnostic Methods Which Have Served Me Best in Determining Sinus Disease and So-Called Hay Fever.
- Dr. Karl S. Blackwell, Richmond, Some Practical Considerations of the Sinuses.
- Dr. David C. Wilson, Charlottesville, Shock Therapy in the Treatment of Affective Disorders.
- Drs. Julian R. Beckwith, James Edwin Wood Jr., and Byrd S. Leavell Jr., Charlottesville, The Clinical Course, Treatment and Prognosis of Acute Glomerulonephritis.
- Dr. William P. Gilmer, Clifton Forge, Roentgen Ray Examination of the Colon.

The Woman's Auxiliary will hold its sixteenth annual meeting at the same time and will be addressed by the president of the state medical society, Dr. George F. Simpson, Purcellville; the president-elect, Dr. Alex F. Robertson Jr., Staunton; the president of the Danville-Pittsylvania Academy of Medicine, Dr. Perry W. Miles, Danville, and the chairman of the advisory council, Dr. Philip St. L. Moncure, Norfolk. Other societies that will meet during the week are the Virginia Radiological Society, Virginia Pediatric Society, Virginia Neuropsychiatric Society and Virginia Obstetrical and Gynecological Society.

## WEST VIRGINIA

**Society News.**—Drs. Robert W. W. Phillips and Delivan A. MacGregor, Wheeling, addressed the Central West Virginia Medical Society, Webster Springs, August 13, on common skin diseases and modern treatment of pneumonia, respectively.—Dr. Rosco G. Leland, Chicago, director, Bureau of Medical Economics, American Medical Association, Chicago, addressed the Kanawha Medical Society, Charleston, September 13, on "The National Health Conference."—Drs. George W. Crile, George Crile Jr. and Ernest Perry McCullagh, Cleveland, will address the Parkersburg Academy of Medicine October 5 on "Clinical Aspects of Endocrinology."—Dr. Arthur E. McClue, state health commissioner, Charleston, will address the Ohio County Medical Society, Wheeling, September 30 on "Socialized Medicine."

## WISCONSIN

**Premature Feeding and Nursing Bureau.**—The Medical Society of Milwaukee County has established a "premature feeding and nursing bureau" in cooperation with the Visiting Nurse Association at St. Joseph's Hospital. The bureau includes a nursery with special equipment and a mother's milk station under the supervision of Miss Alberta Boon, whose salary is provided by the Visiting Nurse Association. She and her staff will investigate facilities for caring for premature infants, instruct mothers in their care in the home, aid physicians and oversee safe transportation of such infants to hospitals when necessary. The Milwaukee Lions Club has donated a refrigerator for storing milk. The breast milk collected will be sold to those able to pay and given free to the indigent. Physicians are requested to inform the bureau as soon as possible after the birth of a premature infant. Other hospitals will be accepted for participation in the project as soon as they conform to minimum standards, according to the *Milwaukee Medical Times*. Dr. Robert E. McDonald is chairman of the society's public nursing committee, under whose direction the new bureau was developed.

## WYOMING

**Society News.**—Rev. Alphonse M. Schwitalla, Ph.D., dean, St. Louis University School of Medicine, St. Louis, addressed the Natrona County Medical Society at a special meeting in Casper August 15 on medical care as proposed at the National Health Conference.

**Plague Infection.**—According to *Public Health Reports*, plague infection was proved in tissue from two ground squirrels (*Citellus armatus*) shot July 9 and from one shot July 22; in a pool of forty-one fleas from one ground squirrel and a pool of twenty-nine lice and three ticks from two shot July 9; these specimens were collected from 6 to 8 miles northeast of Cokesville. It was also proved in the following specimens collected July 20-21 in the vicinity of Hamsford: 129 fleas from thirty-nine ground squirrels, a pool of 147 fleas from seventy-four ground squirrels and in a pool of 101 fleas from forty-nine ground squirrels. The disease was also found to be present in a pool of forty-two fleas and four lice from eighteen ground squirrels shot July 25, 2 miles south of Cora, Sublette County.

## GENERAL

**Rocky Mountain Medical Conference.**—The biennial Rocky Mountain Medical Conference will be held at the Hotel Utah, Salt Lake City, Sept. 5-7, 1939. Scientific sessions will be held on the campus of the University of Utah.

**Casselberry Fund Prize Available.**—The sum of \$500 has accrued from the Casselberry Fund, administered by the American Laryngological Association, and is now available for a prize award, decoration or the expense for original investigation or research in the art and science of laryngology and rhinology. Theses or reports of work done must be in the hands of the secretary, Dr. James A. Babbitt, 1912 Spruce Street, Philadelphia, secretary of the association, before February 1 of any given year. Any further information desired will be furnished by Dr. Babbitt.

**Gift for Syphilis Campaign.**—A special program of education in syphilis control and social hygiene will be inaugurated October 1 by the American Social Hygiene Association, made possible by an anonymous gift of \$25,000. The program will attempt not only to bring knowledge of venereal disease before youth but also to provide biologic information and guidance in preparing young men and women for stronger and more enduring marriage and family relations, it was said. This gift brought the total contributed to the fund being raised by the association's national antisiphilic committee to \$155,015.

**Society News.**—Dr. William H. Schmidt, Philadelphia, was chosen president-elect of the American Congress of Physical Therapy at its annual meeting in Chicago September 12-15. Dr. Frank H. Krusen, Rochester, Minn., was installed as president and Dr. Walter S. McClellan, Saratoga Springs, N. Y., was elected to the group of five vice presidents. Dr. Richard Kovacs, New York, was reelected secretary and Atlantic City, N. J., was chosen for next year's meeting place.—Dr. Wright Clarkson, Petersburg, Va., was elected president of the American Association for the Study of Neoplastic Diseases at the annual meeting in Washington, D. C., September 8-10. Dr. Rollin H. Stevens, Detroit, was elected vice president and

Dr. Eugene R. Whitmore, Washington, reelected secretary. —The annual meeting of the Mississippi Valley Medical Association will be held in Hannibal, Mo., September 28-30.

**WPA Bibliography on Medical Cooperatives.**—The Works Progress Administration is preparing a comprehensive bibliography of material relating to medical cooperatives. The project, which has been in progress since April 1937, is under the direction of Prof. Bernard Ostrolenk of the College of the City of New York, with the Cooperative League of the United States as a cooperating agency. All references to medical cooperatives, with an abstract of the contents of each book and article listed, will be included in the bibliography. The objective is to bring together an exhaustive compilation of references to cooperatives of every kind in all languages. The section dealing with medical cooperatives will include the translation into English of a large number of articles, particularly from Swedish and Danish. Drawing conclusions or offering recommendations will be carefully avoided. An encyclopedia of the cooperative movement is also being prepared, to contain between five and six hundred articles in condensed form. More than ninety WPA workers, chiefly with professional and technical background, are assigned to the work under way in New York City. To date more than 16,000 separate entries have been made in libraries and transcribed on index cards, and more than 15,000 abstracts of this material have been prepared. It is expected that the first volume of the bibliography will be ready for publication by January 1939.

**Academy of Ophthalmology and Otolaryngology.**—The forty-third annual meeting of the American Academy of Ophthalmology and Otolaryngology will be held in Washington, D. C., at the Hotel Mayflower October 10-14, under the presidency of Dr. Harry S. Gradle, Chicago. After Monday the mornings will be given over to instructional courses. Monday morning there will be a joint session at which a symposium on "Dermatological Lesions About the Eyes, Ears, Nose and Throat" will be presented by Drs. Robert von der Heydt, Chicago; Frederick A. Figi, Rochester, Minn., and Udo J. Wile, Ann Arbor, Mich. Among speakers at the section meetings in the afternoons will be:

Prof. Mulock Houwer, Batavia, Java, Ocular Diseases Encountered in the Dutch East Indies.

Prof. M. E. Alvaro, São Paulo, Brazil, Snake Venom in Ophthalmology.

Dr. Horace Newhart and Henry E. Hartig, Ph.D., Minneapolis, Hearing Aids.

Dr. Karl M. Houser, Philadelphia, Therapeutic Uses of Sulfanilamide in Ophthalmic-Otorhinolaryngologic Work.

Dr. Mervin C. Myerson, New York, The Technic of Laryngofissure for Cancer of the Larynx.

Dr. Lyle S. Powell, Lawrence, Kan., Practical Use of Homatropin-Benzedrine Cycloplegia: A Further Report.

Dr. Algernon B. Reese, New York, Operative Treatment of Radiation Cataract.

Dr. William H. Stokes, Omaha, Neb., Transplantation (Implantation) of the Lacrimal Sac in Chronic Dacryocystitis.

Wednesday afternoon the section on otolaryngology will have a panel discussion on sinusitis with the following speakers: Drs. Ernest M. Seydell, Wichita, Kan.; Richard A. Kern, Robert F. Ridpath and Harry P. Schenck, Philadelphia; Alexander S. Macmillan, Boston; Andrew A. Eggston and Duncan MacPherson, New York; Frank J. Novak Jr., Chicago, and Frederick T. Hill, Waterville, Maine. The teacher's section will hold its annual dinner meeting Monday evening. The guests of honor will be the surgeons general of the U. S. Army, U. S. Navy and U. S. Public Health Service, Major General Charles R. Reynolds, Admiral Percival S. Rossiter and Dr. Thomas Parran and their wives. The president's reception will be held at the Mayflower Sunday afternoon October 9, the alumni dinners Tuesday evening, the annual banquet Wednesday evening and the annual golf tournament Friday afternoon. Gen. Wallace Dewitt, commandant of Walter Reed Hospital, has arranged for a visit to the hospital Friday afternoon.

**Conference on Rural Medicine.**—A conference on rural medicine will be held October 7-8 at the Mary Imogene Bassett Hospital, Cooperstown, N. Y., under the auspices of the staff. Dr. Haven Emerson, New York, will preside at a session on rural morbidity at which the speakers will include Drs. George M. Mackenzie, Monroe A. McIver, John H. Powers, Francis F. Harrison and David M. Kydd of the hospital staff; Dr. Edwin L. Crosby, associate in biostatistics, Johns Hopkins University School of Hygiene and Public Health, Baltimore, and Joseph V. DePorte, Ph.D., state department of health, Albany, N. Y. Dr. Edward S. Godfrey Jr., state health commissioner of New York, Albany, will preside over a section on "Health Department Programs and School Health Programs in Rural Areas"; the speakers will be Dr. Emerson, Dr. Allen W. Freeman, professor of public

health administration, Johns Hopkins University School of Hygiene and Public Health, and Dr. Marjorie F. Murray of the hospital staff, Cooperstown. At a session on "Postgraduate Medical Education in Rural Areas" Dr. Thomas P. Farmer, chairman of the council committee on public health and education, Medical Society of the State of New York, Syracuse, will preside. The speakers will be Drs. James D. Bruce, Ann Arbor, Mich., and John B. Youmans, Nashville, Tenn. Saturday morning's program will be on "Economics of Rural Medicine," with Mr. Owen D. Young, chairman of the board, General Electric Company, New York, presiding. The speakers will be:

Dr. Vane M. Hoge, U. S. Public Health Service, Washington, D. C., Hospitals and Hospitalization in Rural Communities.

Dr. Lloyd C. Warren, Franklin, N. Y., The Economics of Rural Medicine from the Viewpoint of the Country Doctor.

Dr. Charles C. McCoy, Cooperstown, Rural Medicine and Economics.

Michael M. Davis, Ph.D., New York, Economics of Rural Medicine.

Dr. Roscoe G. Leland, Director, Bureau of Medical Economics, American Medical Association, Chicago, Medical Care for Rural America.

## CANADA

**Lectures on Nutrition.**—Through the committee on nutrition of the Canadian Medical Association, a series of lectures on nutrition is being presented before medical groups and the public in various parts of Canada. Sir Edward Mellanby, secretary of the Medical Research Council of Great Britain, will speak at Queen's University, Kingston, Ont., October 5. He will make public addresses at Ottawa, Ont., October 6, Toronto October 12, and Montreal October 13 or 14. Dr. Louis H. Newburgh, professor of clinical investigation and internal medicine, University of Michigan Medical School, Ann Arbor, Mich., has addressed meetings of the provincial medical associations at Calgary, Alta., Victoria, B. C., Regina, Sask., and Winnipeg, Man., during September. In addition he has given a number of public addresses on "Normal Nutrition."

## Government Services

### New Executive Director of Social Security Board

Oscar M. Powell, San Antonio, Texas, regional director of the Social Security Board, has been appointed executive director to succeed Frank Bane, who resigned to become executive director of the Council of State Governments, Chicago. Mr. Powell, a lawyer, has served as chairman of the Bexar County relief committee, administering local and federal relief, and as chairman of the Texas Regional Labor Board.

### Technicians Wanted for Public Health Service

Open competitive examinations for positions in the U. S. Public Health Service as senior medical technician, assistant medical technician for bacteriology, roentgenology or the two subjects combined and medical technician for stethography and electrocardiography are announced. The salary for the first position is \$2,000 a year, for the second \$1,620 and for the third \$1,800. Applications must be on file with the U. S. Civil Service Commission by September 26; by September 29 if from Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington or Wyoming. Application forms may be obtained from the secretary of the board of civil service examiners at any first class postoffice and from district offices in Atlanta, Boston, Chicago, Cincinnati, Denver, New Orleans, New York, Philadelphia, Seattle, St. Louis, St. Paul, San Francisco, Honolulu, Balboa Heights, C. Z., and San Juan, P. R.

## CORRECTIONS

**Date of Death of Osler.**—In an item in *THE JOURNAL*, September 10, page 1027, under Foreign News, reference was made to a meeting "on the eighty-ninth anniversary of the death of Sir William Osler." Obviously the anniversary referred instead to the birth of Sir William, who died Dec. 29, 1919.

**Chief of Service at Research and Educational Hospital.**—In the Educational Number of *THE JOURNAL*, August 27, page 840, under surgery, E. Oldberg was listed as chief of service at the Research and Educational Hospital, Chicago, whereas Dr. Warren H. Cole has been chief on the service at that hospital since September 1936.

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Sept. 3; 1938.

#### Research on Asthma

The report of the Asthma Research Council shows that much important work has been done in the past year. At the asthma clinic of St. Mary's Hospital most of it has been in connection with hay fever, which is held to be so closely related to the asthma-urticaria group that deductions can be made from one as to the others. The pollen of any one of the English grasses has been found to serve as a diagnostic agent for all hay fever, and similarly a vaccine made from one grass will desensitize all hay fever. Even the pollen of exotic and very unusual grasses, such as bamboo and sugar cane, conformed to this rule. With the pollen of sugar cane being used as an antigen, it was found possible to desensitize completely a bad case of English hay fever. Such tests show the homogeneity of the pollen antigen and the uselessness of testing patients with a long series of grass pollens to find "which one is causing the mischief."

Several cases were investigated in which a bacterial focus of infection had been complicating and adding to the symptoms produced by grass pollen. But most of the subjects of hay fever were perfectly healthy and therefore the question did not arise. But when there was marked toxemia from a septic focus, this had to be taken into account in grass pollen desensitization. This phenomenon has an important bearing on the whole question of asthma and allied diseases.

The mental attitude of patients suffering from asthma became of increasingly obvious importance as the years went by, but this did not diminish the significance of the other factors. Unquestionably some emotional disturbance, even hilarity, accompanied by hearty laughter, might precipitate an attack of hay fever. The attacks at midsummer often made the patient more neurotic than during the ten safe months of the year. Thus there is a vicious circle; an emotional disturbance may start an attack and an attack may set up a neurosis.

#### BREATHING EXERCISES

In the asthma clinic at King's College Hospital it was found that all persons who have suffered from asthma for any length of time tend to develop a wrong way of breathing, which increases the functional disability of the lungs. Remedial exercises to promote proper breathing are therefore a treatment applicable to every asthmatic person. To be of use these exercises must be properly taught and practiced conscientiously. The results obtained were as follows: In about 40 per cent of the cases the asthma either disappeared or became so slight as not to inconvenience the patient. In about 30 per cent the condition was much improved and there remained about 30 per cent of failures. But of this last group about half had not learned to breathe properly, either because they could not pick up the knack or would not make enough of effort. There thus remained about 15 per cent who did not improve in spite of acquiring perfect breathing. These patients, who were selected for research on the clinical value of breathing exercises, carried on in their usual environment. They did not avoid feathers, dust or foods to which they might be sensitive, nor did they have vaccine treatment or nasal operations.

Copies of the report can be obtained free from the Asthma Research Council, King's College, Strand, London, W. C. 2.

#### Headache Associated with Intracranial Tumors

The headache of intracranial tumors is generally attributed to increased intracranial pressure. An investigation of a series of cases in the department of neurosurgery of the London

Hospital by W. C. Northfield, a report of which has been published in *Brain*, shows that the headache cannot be so explained and traces it to a vascular origin. This headache has a predilection for the morning, usually occurring immediately after awakening but often wakening the patient at an early hour. Rising from bed makes it much worse, and sudden change of posture is much resented. Movements of the head are liable to increase or precipitate the headache. One form of headache is pathognomonic of intracranial tumor: the pain is generalized, paroxysmal and agonizing, and not infrequently it ends in semiconsciousness. This pain may last from thirty seconds to half an hour, then disappearing as quickly as it came and leaving the patient exhausted. There may be amnesia of this attack. The headache of intracranial tumor is nearly always referred to the forehead, whether it involves other areas or not.

#### THE INTRACRANIAL PRESSURE

In sixty-three of 102 verified cases of intracranial tumor Northfield found that the pressure exceeded the normal of 100-200 mm. The highest pressure was 700 mm. Many of the patients with a normal or subnormal pressure had severe headache and, on the other hand, in some cases in which the pressure was very high headache was absent. Therefore high pressure in itself is not a cause of the headache. These considerations cast doubt on the commonly accepted view that the headache associated with intracranial tumor is due to stimulation of the dura by increased intracranial pressure. Unilateral headache cannot be so explained. The differences in pressure within various parts of the brain when a tumor is present must be very small, for the brain, being so soft, is immediately displaced from an area of high to one of lower pressure.

#### THE VASCULAR ORIGIN OF THE HEADACHE

Consideration of conditions other than tumor suggest that the headache may be of vascular origin. The sudden severe pain which heralds subarachnoid hemorrhage may be felt in or over one eye, and at the necropsy the aneurysm is found on the same side of the head. This suggests that the gradual stretching of the wall of the artery and the final rupture of the aneurysm may set up a train of afferent stimuli which is interpreted as headache. In the following case it is difficult to avoid the conclusion that the headache was of vascular origin: A woman aged 41 suffered from right frontal headache and developed right oculomotor palsy. Aneurysm of the right communicating artery was diagnosed and was confirmed by arteriography. The right internal carotid artery was ligated. Half an hour after the operation she acquired a dull ache on the right side of the forehead, similar to what she previously felt. It was easier when she sat up and was aggravated on lying flat. Evidently the interference with the blood supply flow by the ligature provoked afferent stimuli similar to those provoked by the aneurysm. Another proof of the vascular origin of headache is that it is produced by intravenous injection of histamine, which causes dilatation of the cerebral vessels.

#### The Registration of Stillbirths

It is curious that while stillbirths are registered in Scotland they are not in England and that the only other countries where this holds are Ireland and Palestine. In the House of Lords when supporting the second reading of a bill for registration in England Lord Dawson (ex-president of the Royal College of Physicians) said that in these days of a smaller birth rate we needed to do everything possible to secure that the babies born were of the best. Every baby which died represented a failure and we could discover the cause only by studying the whys and wherefores of the failures. In 1934, 43,670 infants died in England at or soon after birth, and it was estimated that 4,000 died in Scotland in 1936. Civilization had brought down the death rate but it had also brought down the birth rate. No

one wanted a hopeless infant to survive, but a number of potentially fit children were lost by want of knowledge and care. It occurred in all classes of the community and was not connected with a particular state of life or society and therefore was probably in large part due to lack of knowledge. He recommended a close study of selected groups of children with the aid of the research department.

### Hospital Isolates All Fever Cases of Doubtful Diagnosis

Complete isolation for every incoming patient, to prevent the spread of disease, has been achieved in the new block of the London Fever Hospital. When the original hospital was built in 1801 the idea was to have a current of air circulating under and around the building. The next step was a building consisting of separate rooms, each isolated from the other. Now in the new block each patient will be isolated. It will be used as a clearing house for incoming patients whose disease has not been definitely diagnosed.

### PARIS

(From Our Regular Correspondent)

Aug. 25, 1938.

### Increased Production of Opium

The report of the special committee of the League of Nations on the cultivation and manufacture of opium appears in the August 15 *Siècle médical*. This committee was appointed to ascertain whether the cultivation of the poppy from which opium is made as well as the production of this narcotic and its derivatives could not be limited and controlled. One hundred and forty-five annual reports from various countries were examined. These reports are encouraging so far as new legislation is concerned. Several countries have announced the passage of new laws or modifications of existing ones to comply with their international obligations in the struggle against the clandestine manufacture of opium. The report from the United States showed that the number of addicts had been reduced from an average of one per thousand of the population as it existed a few years ago to an average of two or three per 10,000, varying according to individual states. The total number of addicts in the United States is estimated at from 30,000 to 50,000 at the highest. In Canada the number of addicts has fallen from 8,000 (ten years ago) to 4,000 at present. The committee found that since 1931 there had been a marked reduction in the manufacture of the five principal habit-forming drugs, viz., morphine, diacetylmorphine, cocaine, codeine and ethylmorphine hydrochloride. There is no longer an excess of legitimate manufacture to form a source of supply for addicts. The 1936 statistics show a general marked increase, however, both in production and in consumption of morphine converted into other forms of narcotics. This increase was interpreted by the committee as the result of a constantly increasing demand of a military character. The manufacture of opium, which in 1935 was 30.8 tons, rose to 36.8 tons in 1936, that of codeine rose from 19.9 tons to 24.3 tons, that of ethylmorphine hydrochloride, from 1,850 Kg. to 2,600 Kg. and that of diacetylmorphine from 670 Kg. to 870 Kg. The quantity of morphine converted into other drugs underwent a marked increase in 1936, rising from 22 tons in 1935 to 28 tons in 1936. The clandestine sale has decreased in certain countries, particularly the United States and Canada. Cooperation between the police of different countries has been efficient.

The committee studied the introduction of hitherto neglected measures to control more rigidly the passports of persons engaged in the sale of narcotics as well as to provide stricter surveillance of transport by airplanes and steamships. The Chinese delegate stated that his government had determined to apply the six year plan of suppression of the cultivation of the opium poppy in nonoccupied territory and to use every means to fight the abuse of and illicit traffic in narcotics. The

cultivation of the opium poppy could be greatly reduced as to the area allowed for such a purpose in the territory still under Chinese control, but the Japanese had compelled the inhabitants of the island of Quemoy, near Amoy, not only to cultivate the opium poppy but to establish a factory for the extraction of opium. The delegate from the United States stated that the civil government established by the Japanese in the province of Hopei had abrogated the laws to govern the cultivation and manufacture of opium which had been enforced by the Chinese. In northern China there had been a marked increase in the use of opium since Japanese occupation. The opium manufacturers had at their disposal unlimited quantities of morphine which came from Chinese provinces under control of the Japanese and from Iran. The gravity of the situation was shown by the fact that 650 Kg. of diacetylmorphine had been sent to the United States in fifteen months. In Shanghai, except in the French and International concessions, all control had ceased. More than 1,000 cases of opium from Iran were being held at Macao for the Japanese to be sold in Shanghai or South China.

The Japanese member of the committee not only questioned the accuracy of the reports made by the Chinese and American delegates but denied some of them absolutely. The Japanese government had remained faithful to its policy of suppression of the abuse of opium and other habit-forming drugs and had continued to cooperate with the committee, even though no longer a member of the League of Nations. In Manchukuo the government had expelled 6,000 people engaged in opium traffic and was considering a plan to suppress cultivation of the opium poppy over a period of ten years. It was very difficult to eliminate the opium habit in China, because at the end of 1936 there were over 3,600,000 addicts.

At the end of the meeting the committee of the League of Nations passed the following resolution: 1. The attention of the council of the League of Nations is again drawn to the gravity of the situation as reflected in the reports submitted to the committee on narcotics. 2. The council is urged to demand more energetic measures on the part of all governments to correct the situation. 3. The reports should be sent to the Japanese and Chinese governments so as to have their views as to whether the information given by the Chinese and American delegates is accurate.

### Treatment of Tuberculous Peritonitis

At the recent eighth annual Congress of Thalassotherapy, a conference founded to study the results of nonoperative methods, especially the influence of sea air and baths, in the treatment of tuberculous infections, a series of papers were read on the treatment of tuberculous peritonitis in children. It was concluded that, from the standpoint of pathogenesis, the disease is most frequently of genital origin in girls, that it is most common in both sexes as intestinal tuberculosis and that the first evidences are often found in the vicinity of tuberculous mesenteric lymph nodes. Stress must be laid on the relative frequency of an acute onset, the clinical picture greatly resembling that of peritonitis due to ordinary pyogenic bacteria or to the typhoid bacillus. The treatment should have as its basic principle a combination of heliotherapy and use of sea water baths. These methods are contraindicated only if associated active pulmonary lesions exist, but these are comparatively rare. If they do exist, early operative intervention is indicated. If such associated foci can be excluded, it is advisable to postpone operation as long as possible. Heliotherapy combined with treatment with sea air and sea water baths will often effect a cure without operation, which should be done only if there are no signs of improvement after a year of non-operative treatment. Even if operation is indicated, the patient is in better condition to benefit by surgical measures after a year of such treatment. Ascites which is steadily increasing

in spite of tapping at regular intervals is an indication for early operative intervention, as are signs of intestinal occlusion. As soon as the ascites has disappeared and there are general signs of healing of the tuberculous peritonitis, removal of tuberculous intestinal or tubal foci is advisable. After apparent cure of tuberculous peritonitis, the patient should be given follow-up heliotherapy and treatment with sea air and sea water baths.

## BERLIN

(From Our Regular Correspondent)

Aug. 15, 1938.

### The Increase in Cancer Mortality

The considerable increase in the absolute number of cancer deaths in all civilized lands is undisputed. It is likewise generally recognized that the aging of the population, improved diagnosis and other elements are important factors in this upward trend. Numerous sources of statistical error have also been studied. In several central European regions for which almost complete necropsy statistics are available, the observations are much more exact than in former years. This is especially true of certain of the larger European cities. Virtually all investigators whose observations are based on this reliable type of material arrive at the same conclusion, namely that the increase in cancer is essentially a result of an aging of the population. On the other hand, another group of investigators, led by the American statistician Hofmann, maintain that the increase in cancer mortality is actually proceeding at a swifter pace than the aging of the population. Dr. Haubold of the National Health Bureau has recently worked up in great detail a sufficiently sizable and reliable statistical material from ten large German cities having a total population of 9.4 millions. In all these cities conditions predisposed toward a superior accuracy of the data: necropsies were required by law, and the large number of thoroughly trained physicians available reduced to a minimum the likelihood of incorrect diagnosis.

In his survey, Haubold compares the statistics of one prewar decade (usually 1901-1910) with one postwar decade (either 1920-1930 or 1923-1932). The older age groups presented greater increases than the younger. The increase in the older male population was less than that in the older female population. Accordingly, although the aggregate population of the ten cities studied increased from 5.7 million to 9.4 million, namely by barely some 61 per cent, this by no means represents a symmetrical increase in all age groups of both sexes. The increase in the absolute number of cancer fatalities meanwhile proceeded at a vastly greater rate; the yearly average rose from about 5,850 to about 13,260, an increase of about 226 per cent. Careful study reveals that there was no question of an increased cancer mortality for either sex up to the sixty-ninth year of life. On the contrary, in most age groups a slight but appreciable decline in the mortality was evidenced. Only among the elderly of both sexes had the death rate from cancer increased, in some instances quite substantially. Here, however, could be observed definite interrelation of the rise of cancer mortality among the elderly and the decline in the considerable mortality from senile infirmities. Between the two decades compared, the latter rate declined 58.2 per cent among men and 53.8 per cent among women. Thus the greater than 50 per cent decline in mortality from senile infirmities is paralleled by a substantial simultaneous increase in cancer mortality among the identical age groups. From all the foregoing data one may conclude that the danger from cancer is no greater today than in former years. An inhabitant of one of the larger German cities is therefore no more likely to become affected with fatal cancer or to die of the disease at an earlier age than the average citizen of some forty years ago. A mounting fear of cancer is thus groundless.

Another related problem, likewise investigated by Dr. Haubold, is that of cancer morbidity among mothers. The card index records of about 3,000 women, assembled by the German National Anticancer Commission, were studied. It was disclosed that about three fourths (75.9 per cent) of all these women had been domestically occupied and that nearly half of this group were under the age of 60. Thus cancer must attack chiefly women who should still be leading active lives and even still youthful women, since 367 (11.8 per cent) were under the age of 40 at the time of clinical examination. Furthermore, it was revealed that the great preponderance of women included in this material presented cancer of the uterus, the breast and so on, and only 14.5 per cent cancer seated in the digestive tract. This distribution is, to be sure, probably the consequence of a somewhat homogeneous composition of the survey material, since it is chiefly drawn from gynecologic clinics. Moreover, about 14 per cent of these women had children whom they were unable to nurse. A social as well as a medical problem here poses itself. The detriment suffered by the children through the languishing illness of a cancerous mother is precisely the worst in the families of those women who should be best capable of looking after their own. This statistical study reveals that not altogether unfounded are the apprehensions of many physicians with regard to the genetic-biologic implication of a high cancer morbidity among women in what ought to be the age of greatest activity.

### Surgical Treatment of Pulmonary Abscess

Professor Paolucci of Bologna, in a lecture before the Berlin Medical Society, reported his studies of 200 acute and chronic cases of pulmonary abscess observed during the last five years. The left lobe was the seat of the abscess in 70 per cent of the cases and the inferior lobe was involved in 46 per cent of all the cases. Difference of opinion still exists as to whether lung abscesses are of bronchial or embolic origin. Experiments conducted at Paolucci's clinic revealed that the pulmonary process can always (100 per cent of cases) be produced by the bronchial route if the coughing reflex in the upper nasal passages is abolished and that part of the bronchus superior to the introduced material is closed off. These experiments spoke against the embolic origin of pulmonary abscess.

Immediate surgical intervention is indicated in case of a septic gangrenous abscess which tends to run a rapid course. In the chronic type characterized by secondary fibrosis and bronchiectatic formations, one can set particular limits to the suppurative bronchiectasis. In the latter event nothing less than extirpation of the entire affected lung is indicated. A mixed bacterial flora is almost always found, the preponderance of a certain micro-organism being of no prognostic value; anaerobes too are frequently present. In contrast to the general opinion that six weeks of observation is necessary before prognosis of a benign or malignant course is possible, Paolucci believes that this determination can be made after two weeks on the basis of the patient's condition and from the roentgenogram. The author's therapeutic approach is governed by this principle; early surgical intervention is with him axiomatic. The simplest procedure consists in plugging of the opened abscess cavity; for this the author recommends gauze saturated with iodoform or barium suspension. In extensive septic gangrene, a condition frequently resistant to all treatment, a wide pneumotomy is still the operation of choice. Removal of the pulmonary tissue in stages has proved a successful substitute for the often difficult lobectomy. In cases of multiple abscesses the individual foci ought to be opened separately if they are far apart. Adjacent cavities heal best if a wide breach is created. Frequent and extremely severe complications are pleural reactions, empyema for example. Even for severe cases, if timely operation is performed, the mortality is only 14 per cent, as contrasted with cases which first come to



operation in the chronic stage; the mortality for the latter is 50 per cent. In the course of the illness apparent improvement may be observed, but this only serves to delude the physician and to postpone the necessary surgical treatment.

## ITALY

(From Our Regular Correspondent)

Aug. 15, 1938.

### Social Medicine

Regulations recently established require employers in agricultural and industrial fields to arrange periodic medical examinations at intervals of no more than six months for workers, especially women and children. The regulations concern types of work involving exposure to atmospheric changes, humidity, dust or irritating toxic gas or smoke, as well as those involving the transporting of heavy weights or the maintaining for long hours of an unnatural posture.

The Comitato tecnico nazionale di agricultural work met recently in Milan to discuss problems involving the health of workers during rice harvest and threshing. Professor Aiello spoke on sanitary statistics which were gathered during a recent campaign for the health of rice workers. He dealt especially with spirochetosis and certain forms of traumatic and cutaneous diseases which are frequent in workers during the time of mowing and husking. A competition among manufacturers of protective stockings, shoes, arm cuffs and glove fingers to be used by rice workers is announced.

The first national congress on living conditions of Italians in rural districts was recently held in Rome, with many hygienists and physicians in attendance. Professor Alessandrini shoyed the advisability of carrying on a campaign against brucellosis in rural districts. Professor Nai discussed bovine tuberculosis and echinococcosis. Professor Gardini dealt with ancylostomiasis. Professor Vennero discussed sanitation of rural housing, compulsory insurance of farmers against industrial diseases and use of proper implements in farming.

Regulations concerning medical service given to farmers were recently established. Medical honorariums and the cost of clinical and roentgenologic researches will be reduced.

### Cancerigenic Substances

Professor Watermann of the Istituto del Cancro of Amsterdam addressed the members of the Accademia Medica of Rome on the cancerigenic properties of certain fatty substances by means of which he produced carcinoma of the stomach in rats. When the cholesterol esters are heated to a temperature of 200 C. they are transformed into cancerigenic substances, the prolonged administration of which, by mouth, induces the development of carcinomatous papilloma in rats. Daily administration of heated cholesterol esters for 260 or 350 consecutive days induced the formation of papilloma in two animals. The speaker said that there is not a chemical bond between various cancerigenic substances but that there may be a physiologic bond. He pointed out the importance of making studies on the action of many substances such as, for instance, food fats which are heated to high temperatures. In the discussion which followed, Professor Serono said that cholesterol oleate is harmless and has no cancerigenic action when it is prepared in a vacuum and well purified. However, when it is submitted to high temperatures in air it acquires cancerigenic properties because it is transformed during the reaction into tar products of the phenanthrene series, which are cancerigenic.

### Avitaminosis in School Children

In a lecture before the Accademia delle Scienze Mediche of Naples, Professor Ciampi discussed the kinds of vitamin deficiency found in school children of Naples. The typical forms have the same importance as grave forms in relation to hygiene and prevention of infections. He makes a diagnosis of C

avitaminosis from the fragility of the capillaries, which is rapidly determined by a special vacuum cupping glass 1 cm. in diameter. The capillary resistance was diminished in forty-one children in a group of 137 who had the examination. It became normal in the majority of cases in about two weeks, during which time the children ate three oranges a day. Three oranges eaten daily also controlled avitaminosis C in a large group of young girls. The speaker questioned the mothers of avitaminotic children. He found that C avitaminosis is more frequent in poor than in rich families. When it develops in rich children it is due to errors in the diet.

### Meeting of Dermatologists

The Società italiana di dermatologia e sifilografia held its thirty-first reunion in Rome with Professor Martinotti, head of the Bologna clinic, presiding. Professors Ciambellotti of the dermatosyphilopathic clinic of Modena, Sannicandro of the Sassari clinic and Ballarini of the dermatosyphilopathic clinic of Bologna were official speakers. Professor Ciambellotti spoke on focal dermatoses. The theory of focal infection is frequently objected to, especially because of the destructive operations frequently made on tonsils and teeth. The theory of the existence of focal dermatoses is also objected to. The speaker pointed out the difficulties which exist in ascertaining the role of dermatoses as foci of infection. It is possible that the pathologic skin may be a seat of infection. It is difficult, however, to establish the reflex, nervous or circulatory route followed by infection and the mechanism by which dermatosis may develop into a focus of infection. Professor Sannicandro spoke on the relation between focal infection and the urogenital apparatus. Gonorrhea is a typical focal infection which follows the characteristic evolution of other diseases of focal origin. Gonococci may enter the body, remain latent for a long time and increase in virulence late in the evolution of the infection. The syndromes with a focal origin in the lower segment of the genital tract are bacteriuria, diseases of the urinary tract, nonspecific orchiepididymitis, Reiter's syndrome and the so-called arthritic spirochetosis.

Professor Aldo Castellani, head of the clinic of tropical diseases, reported some cases of tropical mycetal urethritis. A group of professors of the clinic of Milan, of which Professor Pasini is the head, spoke on para-aminophenylsulfanilamide in the treatment of gonorrhea. Reference was made to 1,600 cases. The speakers regard para-aminophenylsulfanilamide of therapeutic value in the treatment of gonorrhea and its complications as well as in the treatment of soft ulcer and venereal adenitis. The inconveniences and phenomena of intolerance to the drug can be overcome by watching the patient carefully. The drug did not control gonorrheal vulvovaginitis in girls.

## Marriages

THOMAS B. CARROLL JR., Waycross, Ga., to Miss Mildred Turner of Augusta, in Aiken, S. C., July 23.

JAMES LAFAYETTE HALL, Jackson, Miss., to Miss Eleanor Andrews Brown in Port Gibson, August 21.

WALTER EATON GARREY, Boston, to Miss Elizabeth Patten of Ann Arbor, Mich., in August.

CHAMPNEYS HOLT HOLMES to Miss Lena Jacqueline Swift, both of Atlanta, Ga., August 25.

FRANCIS W. HOULIHAN, Ackley, Iowa, to Miss Mary Agnes McLaughlin of Stuart, July 28.

JOHN S. HAIGH, Los Angeles, to Miss Margaret K. Neil of Pasadena, June 25.

IRVING L. GREENBERG to DR. REGINA GABLER, both of New York, August 27.

DUANE OLSON, Gaylord, Minn., to Miss Lyndis Iverslie of Delano recently.

GEORGE L. HOFFMAN JR., Philadelphia, to Miss Helen Mildred Lobb recently.

## Deaths

Harold Dickinson Senior, Salsbury Cove, Maine; L.R.C.P., of London, and M.R.C.S., of England, 1892; University of Durham College of Medicine, Newcastle-upon-Tyne, England, 1895; F.R.C.S., England, 1895; since 1936 professor emeritus of anatomy at the New York University College of Medicine; after several years of teaching in England he spent several years in Canada and later served on the faculties of the Medico-Chirurgical College of Philadelphia and Syracuse University and spent three years as a fellow in the Wistar Institute of Anatomy and Biology, Philadelphia; in 1910 he was appointed professor of anatomy and director of the anatomic laboratories of New York University; was for many years an associate editor of the *American Journal of Anatomy*; member, and vice president 1922-1923, of the American Association of Anatomists; University of Durham in 1918 conferred on him an honorary degree and a gold medal; aged 67; died, August 6, in the French Hospital, New York.

Frederick Leonard Fenno \* New Orleans; Tulane University of Louisiana School of Medicine, New Orleans, 1917; fellow of the American College of Physicians; clinical professor of neuropsychiatry at the Louisiana State University School of Medicine; served during the World War; past president and secretary of the Orleans Parish Medical Society; formerly assistant professor of clinical neurology at his alma mater; for many years medical director of the public school system; aged 43; died, July 20, of cardiac dilatation and hypertension.

Roy Thaddeus Goodwin \* San Antonio, Texas; University of Texas School of Medicine, Galveston, 1912; fellow of the American College of Surgeons; past president of the Bexar County Medical Society and the International Post Graduate Medical Assembly; on the staffs of the Robert B. Green Memorial Hospital, Santa Rosa Hospital, Nix Hospital and Baylor Hospital; aged 50; died, July 12, of a brain tumor.

Richard Hayward Morgan, Detroit; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1908; member of the Michigan State Medical Society; at one time on the staff of the Metropolitan Life Insurance Company Sanatorium, Mount McGregor, N. Y.; on the staffs of the Herman Kiefer Hospital, Harper Hospital and the Detroit Tuberculosis Sanitarium; aged 57; died, July 10.

Joseph William Dennin \* Roselle, N. J.; Medico-Chirurgical College of Philadelphia, 1914, fellow of the American College of Surgeons; served during the World War; attending obstetrician to the Elizabeth General Hospital and St. Elizabeth's Hospital, Elizabeth, N. J.; aged 47; died, July 16, in the Veterans Administration Facility, Lyons, of tuberculosis.

Emanuel Friend \* Chicago; Rush Medical College, Chicago, 1890; formerly instructor in surgery at his alma mater; fellow of the American College of Surgeons; for many years on the staff of the Michael Reese Hospital; co-editor of the fourth edition of "Principles of Surgery," by Dr. Nicholas Senn; aged 70; was found dead, July 19, of chronic myocarditis.

Robert Du Bose Alexander \* St. Louis; Washington University School of Medicine, St. Louis, 1905; assistant professor of surgery, St. Louis University School of Medicine; fellow of the American College of Surgeons; served during the World War; on the staffs of St. Mary's and Jewish hospitals; aged 62; died, July 26, of cerebral hemorrhage.

Frank Kadlec \* Chicago; Loyola University School of Medicine, Chicago, 1916; served during the World War; for many years attending physician to the Infant Welfare, Department of Health, City of Chicago; on the staff of the Jackson Park Hospital; aged 48; died, July 14, of pulmonary embolism and acute appendicitis.

Robert M. Adams, Ripley, Miss.; Memphis (Tenn.) Hospital Medical College, 1902; member of the Mississippi State Medical Association; president of the Mid-South Post Graduate Medical Assembly; formerly county health officer; aged 66; died, July 1, in the Baptist Hospital, Memphis, Tenn.

William Avery Hillard, Westerly, R. I.; College of Physicians and Surgeons, Medical Department of Columbia University, 1893; member of the Rhode Island Medical Society; for many years health officer of Pawcatuck, Conn., and school physician; aged 67; died, July 1, of Hodgkin's disease.

Russell Wilkins \* Manchester, N. H.; Dartmouth Medical School, Hanover, 1896; veteran of the Spanish-American and World wars; for many years associated with the Veterans

Administration; aged 65; died, July 22, in the Elliott Hospital, of chronic bronchitis, emphysema and heart disease.

Walter Channing Bailey, Cambridge, Mass.; Harvard University Medical School, Boston, 1898; member of the Massachusetts Medical Society and the American Clinical and Climatological Association; served during the World War; aged 67; died, July 31, of cerebral hemorrhage.

William Isaiah Scott \* Kokomo, Ind.; Medical College of Indiana, Indianapolis, 1898; formerly a druggist; served during the World War; formerly secretary of the Howard County Medical Society; at one time secretary of the county board of health; aged 63; died, July 1, of angina pectoris.

F. Marion Kent \* Bellevue, Ohio; Medical College of Ohio, Cincinnati, 1889; fellow of the American College of Surgeons; past president of the Sandusky County Medical Society; formerly on the staff of the Bellevue Hospital; aged 73; died, July 10, of carcinoma of the prostate.

John Paul Roebuck \* Lancaster, Pa.; Medico-Chirurgical College of Philadelphia, 1899; past president of the Lancaster City and County Medical Society; on the staff of the Lancaster General Hospital; aged 59; was instantly killed, July 2, in an automobile accident near Wilmington, Del.

James Alfred Bagley, Ensley, Ala.; Birmingham Medical College, 1903; member of the Oklahoma State Medical Association; formerly medical director of the Western Oklahoma Tuberculosis Sanatorium, Clinton, Okla.; aged 59; died, June 9, of carcinoma of the larynx.

John Alexander Hendrick \* Shreveport, La.; University of Nashville (Tenn.) Medical Department, 1903; fellow of the American College of Surgeons; chief of surgical staff, Highland Sanitarium; aged 62; died, July 9, of coronary occlusion.

Joseph R. Ebersole, Monmouth, Ill.; Hahnemann Medical College and Hospital, Chicago, 1888; medical director of the Illinois Bankers Life Assurance Company; formerly member of the school board and county coroner; aged 78; died, July 29.

Henry Walton Mooney, New York; University of the City of New York Medical Department, 1891; member of the Medical Society of the State of New York; aged 76; died, July 17, of arteriosclerosis.

John B. Scruggs, O'Fallon, Ill.; St. Louis College of Physicians and Surgeons, 1898; member of the Illinois State Medical Society; past president of St. Clair County Medical Society; aged 71; died, July 4.

William Parsons Sawyer, Nevada City, Calif.; University of Pennsylvania Department of Medicine, Philadelphia, 1891; aged 74; died recently of mitral regurgitation and cardiac decompensation.

Charles Greene Brink, New York; University of the City of New York Medical Department, 1895; member of the Medical Society of the State of New York; aged 64; died, June 8.

Belle Ellingsen Merrill \* Oakland, Calif.; University of California Medical School, San Francisco, 1920; aged 53; died, July 6, of injuries received in an accident near Coquille, Ore.

Lewis William Grice, Armada, Mich.; University of Michigan Homeopathic Medical School, Ann Arbor, 1918; aged 43; died, July 6, of illuminating gas poisoning, self administered.

Joseph Lieberman, East Rutherford, N. J.; Eclectic Medical College of the City of New York, 1909; aged 68; died, June 12, of coronary thrombosis and chronic myocarditis.

Creighton Walter Skelton \* Providence, R. I.; Albany (N. Y.) Medical College, 1898; since 1924, business manager of the *Rhode Island Medical Journal*; aged 65; died, June 26.

William Parry Jones, Bethlehem, Pa.; University of Vermont College of Medicine, Burlington, 1890; aged 71; died, June 13, in St. Luke's Hospital, of chronic myocarditis.

Green Ewing Hill \* Girard, Ill.; Rush Medical College, Chicago, 1890; past president of the Macoupin County Medical Society; aged 75; died, July 3, of heart disease.

Albert J. Weston, Cleveland; Western Reserve University Medical Department, Cleveland, 1889; aged 81; died, June 29, of cerebral hemorrhage and arteriosclerosis.

George Orrin Robbins, New Bedford, Mass.; Yale University School of Medicine, New Haven, Conn., 1879; aged 84; died, June 3, in Taunton, of arteriosclerosis.

Philip Maginis Johnson, Toledo, Ohio; Cleveland Homeopathic Medical College, 1899; aged 64; died, July 17, in St. Vincent's Hospital, of coronary sclerosis.

D. F. Hedgpeth, Ozark, Mo.; Missouri Medical College, St. Louis, 1888; aged 76; died, July 6, of cerebral hemorrhage.

## Bureau of Investigation

### MISBRANDED "PATENT MEDICINES"

#### Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE: The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the composition; (4) the type of nostrum; (5) the reason for the charge of misbranding and (6) the date of issuance of the Notice of Judgment—which may be considerably later than the date of the seizure of the product.]

**Sip-O.**—George J. McCabe, trading as McCabe Drug Co., Fargo, N. D. Composition: Essentially water, sugar, menthol, chloroform and small amounts of pine tar and unidentified plant extractives. Fraudulently represented as a remedy for coughs, bronchitis, bronchial asthma, hay fever, catarrh, etc.—[N. J. 26727; July 1937.]

**Life-Line Tonic.**—John B. Kori, trading as United States Remedy Co., Jacksonville, Fla. Composition: Chiefly epsom salt, glycerophosphates, quinine, plant material, and citric and hydrochloric acids. Fraudulently represented as a "cure-all."—[N. J. 26732; July 1937.]

**Protargol Vaginal Suppositories.**—Paul B. Elder, trading as Paul B. Elder Co., Bryan, Ohio. Composition: Protargol, 1.18 per cent in each suppository. Adulterated because below the professed standard of strength and purity; misbranded because claimed to contain 5 per cent of protargol, and because fraudulently represented as a cure for gonorrhea in the female and effective to destroy the gonococcus.—[N. J. 26733; July 1937.]

**Commanders.**—Master Drugs, Inc., Omaha. Misbranded because of false and misleading claims, such as "Containing All Six Essential Vitamins A-B-C-D-E-G In Concentrated Form . . . Each Commander is equivalent in vitamin content to one spoonful Cod Liver Oil, one cake of yeast, one orange, two pounds of whole wheat . . ."—[N. J. 26734; July 1937.]

**Solution of Genuine Doyle Chlorinometer Gas.**—Chicago Drug Sales, Inc., Chicago. Composition: Chlorine dissolved in carbon tetrachloride. Fraudulently represented as a remedy for whooping cough, influenza, laryngitis, etc.—[N. J. 26735; July 1937.]

**Universal Brand Pain Expeller.**—Chicago Drug Sales, Inc., Chicago. Composition: Essentially ammonia, a pungent substance such as red pepper, a small amount of volatile oil, with alcohol and water. For rheumatism, neuralgia, stiff joints, etc. Fraudulent therapeutic claims.—[N. J. 26735; July 1937.]

**Universal Brand Liniment.**—Chicago Drug Sales, Inc., Chicago. Composition: Essentially an ammonium soap and volatile oils including camphor, with alcohol and water. Fraudulently represented to relieve rheumatism, sciatica, cramps, etc.—[N. J. 26735; July 1937.]

**Laxative Cold and Grippe Breakers.**—Chicago Drug Sales, Inc., Chicago. Composition: Acetanilid, starch and resinous plant material, coated with chalk. Fraudulent therapeutic claims.—[N. J. 26735; July 1937.]

**Dr. Hobbs' Sparagus Kidney Pills.**—Chicago Drug Sales, Inc., Chicago. Composition: Plant material including juniper berries. Fraudulently represented as a cure for kidney and bladder troubles, Bright's disease, dropsy, neuralgia, etc.—[N. J. 26735; July 1937.]

**Eiert's Daylight Family Liver Pills.**—Chicago Drug Sales, Inc., Chicago. Composition: Plant material including a laxative drug. Fraudulently represented as a cure for all fevers, blood impurities, female complaints, etc.—[N. J. 26735; July 1937.]

**Kalamazoo Celery Nervine Blood and Liver Pills (or Dunkley's Celery-tone Pills).**—Chicago Drug Sales, Inc., Chicago. Composition: Plant material including a laxative drug and an alkaloid-bearing drug. For blood, liver, kidney and stomach disorders, etc. Fraudulent therapeutic claims.—[N. J. 26735; July 1937.]

**Knill's Black Diarrhea Blackberry Compound Pills.**—Chicago Drug Sales, Inc., Chicago. Composition: Plant material including an alkaloid-bearing drug, a laxative drug and camphor. Fraudulently represented as a cure for black diarrhea, cholera, and all stomach pains. No blackberry present.—[N. J. 26735; July 1937.]

**Bull's (Dr. John W.) Celebrated Pills.**—Chicago Drug Sales, Inc., Chicago. Composition: Plant material including an alkaloid-bearing drug, and camphor. For impure blood, female complaints, liver and kidney disorders, anemia, etc. Fraudulent therapeutic claims.—[N. J. 26735; July 1937.]

**Erie Drug Co. Croup and Pneumonia Salve.**—Erie Drug Co., Erie, Pa. Composition: Essentially volatile oils (about 10 per cent) including wintergreen, camphor and menthol, in a petrolatum base. Fraudulently represented as a cure for croup, pneumonia, rheumatism, etc.—[N. J. 26736; July 1937.]

**Dexter Liniment.**—Chicago Drug Sales, Inc., Chicago. Composition: Chiefly phenols, essential oils including origanum and hemlock, with kerosene. Fraudulently represented as a cure for diphtheria, rheumatism, hemorrhoids, old sores, etc.—[N. J. 26735; July 1937.]

**Schuh's Home Made Anti-Bilious Stomach and Liver Pills.**—Chicago Drug Sales, Inc., Chicago. Composition: Extracts of plant drugs, including a laxative. For impure blood, dropsy, fevers, hemorrhoids, worms, etc. Fraudulent therapeutic claims.—[N. J. 26735; July 1937.]

**Colorado Cough and Catarrh Root.**—Chicago Drug Sales, Inc., Chicago. Composition: Essentially plant material, bearing evidence of insect infestation. Fraudulently represented as a remedy for asthma, catarrh, all throat, lung and stomach troubles, etc.—[N. J. 26735; July 1937.]

**Palmer's Compound Carbolic Salve.**—Erie Drug Co., Erie, Pa. Composition: Essentially carbolic acid, (0.7 per cent), volatile oils including menthol, and a small amount of zinc oxide, in a lanolin base. For hemorrhoids, ulcers, eczema and "all skin diseases." Fraudulent therapeutic claims.—[N. J. 26736; July 1937.]

**Sterling Vapor and Rubbing Salve.**—Erie Drug Co., Erie, Pa. Composition: Essentially volatile oils (about 6 per cent) including menthol, thymol and eucalyptol, in petrolatum. Fraudulently represented to be a cure for catarrh, pneumonia, hemorrhoids, etc.—[N. J. 26736; July 1937.]

**Quinlax Laxative Quinine Tablets.**—Erie Drug Co., Erie, Pa. Composition: In each tablet, acetanilid (0.97 grain), caffeine (0.27 grain), quinine (0.494 grain), bile salts, and an unidentified laxative drug. For la grippe, coughs, acute catarrh and bronchitis, etc. Fraudulent therapeutic claims.—[N. J. 26736; July 1937.]

**Doll's (Dr.) Root and Herb Tea.**—Erie Drug Co., Erie, Pa. Composition: Plant material including senna leaves, dandelion root, bearberry leaves, frangula bark, licorice root and coriander seeds. For blood, liver and kidney diseases, diabetes, Bright's disease, erysipelas, etc. Fraudulent therapeutic claims.—[N. J. 26736; July 1937.]

**Solvuric Buchu and Juniper Compound Pills.**—Erie Drug Co., Erie, Pa. Composition: Extracts of plant drugs including juniper and buchu, with saltpeter. Fraudulently represented as a remedy for all kidney and bladder disorders.—[N. J. 26736; July 1937.]

**Sterling Compound Extract Smartweed.**—Erie Drug Co., Erie, Pa. Composition: Essentially plant drug extracts, volatile oils including sassafras and mustard, with 62.5 per cent of alcohol by volume, and water. For chills, sore throat, rheumatism, colic, etc. Fraudulent therapeutic claims.—[N. J. 26736; July 1937.]

**Burn Ease for Sunburn.**—Erie Drug Co., Erie, Pa. Composition: Essentially volatile oils including menthol, eucalyptol, camphor and clove oil, in a base of stearic acid and water. Fraudulently represented to heal nasal catarrh, hemorrhoids, ulcers, eczema, psoriasis, etc.—[N. J. 26736; July 1937.]

**Sterling Syrup White Pine and Tar.**—Erie Drug Co., Erie, Pa. Composition: Essentially plant drug extracts, menthol, pine tar, chloroform, alcohol, sugar and water. For coughs, bronchial catarrh, spasmodic croup, etc. Fraudulent therapeutic claims.—[N. J. 26736; July 1937.]

**Sterling Antiseptic Solution.**—Erie Drug Co., Erie, Pa. Composition: Essentially boric acid, volatile oils including menthol, eucalyptol and thymol, with 27.8 per cent of alcohol by volume, and water. Falsely represented as an "antiseptic solution" and a "germ killer."—[N. J. 26736; July 1937.]

**Anti-Itch.**—Arnold Drug Co., Topeka, Kan. Composition: Essentially zinc oxide, petrolatum, and glycerin, with small amounts of carbolic acid, wintergreen and pink coloring. For itch, eczema and other skin disorders. Fraudulent therapeutic claims.—[N. J. 26747; July 1937.]

**Bralot Rheumatic Tablets.**—Bralot Laboratories, Gardnerville, Nev. Composition: Essentially 1.1 grains of aminopyrine and 4.1 grains of sodium salicylate per tablet, flavored with chocolate. Fraudulent therapeutic claims.—[N. J. 26748; July 1937.]

**Bralot Laxative Tablets.**—Bralot Laboratories, Gardnerville, Nev. Composition: Laxative drugs. Fraudulent therapeutic claims.—[N. J. 26748; July 1937.]

**Hi-Test Catarrh Jelly.**—Sam Sorbitz, Star Jobbing Co., and Continental Drug Corp., Alton, Ill. Composition: Essentially petrolatum, with small amounts of volatile oils including menthol and eucalyptol. Fraudulently represented as a cure for catarrh and hay fever.—[N. J. 26751; July 1937.]

**Quality Sealed Sore Throat Remedy.**—Sam Sorbitz, Star Jobbing Co., and Continental Drug Corp., Alton, Ill. Composition: Essentially water, glycerin, potassium chlorate, tannic acid and carbolic acid. Fraudulent therapeutic claims.—[N. J. 26751; July 1937.]

**Lacta Kaolin Plain.**—Alpha Laboratory, Inc., Chicago. Composition: Essentially sugar of milk, kaolin, agar and cocoa. Fraudulently represented as a remedy for intestinal putrefaction, etc.—[N. J. 26752; July 1937.]

**Lacta Kaolin Laxative.**—Alpha Laboratory, Inc., Chicago. Composition: Essentially milk sugar, kaolin, agar, cocoa and phenolphthalein. Fraudulently represented as a remedy for intestinal putrefaction, etc.—[N. J. 26752; July 1937.]

**H. P. Healing Balm.**—H. P. Co., Wenatchee, Wash. Composition: Essentially lead oleate and perfume, in an ointment base. Not an antiseptic or "germ killer," as represented. For hemorrhoids, all sores and infections, erysipelas, blood poisoning, sinus trouble, etc. Fraudulent therapeutic claims.—[N. J. 26753; July 1937.]

**Mother Beach Stomach Tablets.**—Shores Co., Cedar Rapids, Iowa. Composition: Essentially sodium carbonate (12.1 grains), bismuth subnitrate (9.2 grains), magnesium oxide (8 grains), and starch. Fraudulent therapeutic claims.—[N. J. 26754; July 1937.]

**Bewman's Red Lax-Tiv.**—Bowman Bros. Drug Co., Canton, Ohio. Composition: Essentially emodin-bearing drugs and aloes. For constipation, etc. Fraudulent therapeutic claims.—[N. J. 26761; July 1937.]

**Nerve-Rumat Liniment.**—Joe Bennett and Royal Sundries Corp., New York. Composition: Turpentine, alcohol (32 per cent by volume), water, and small amounts of camphor and insoluble material. For rheumatism, lumbago, pleurisy, etc. Fraudulent therapeutic claims.—[N. J. 26767; July 1937.]

**Tam.**—E. Fougere & Co., Inc., New York. Composition: Senna-leaf tissues, fig tissues and seeds, prune tissues, tissues of *Carthartocarpus* fruit, and starches, contaminated with mold. Adulterated in that its purity fell below the professed standard of quality claimed—namely, "100% pure natural laxative fruits," as the chief laxative ingredient was senna leaves and not laxative fruits. Fraudulent curative claims.—[N. J. 26768; July 1937.]

**British Oil.**—Levy Products, Inc., Tampa, Fla. Composition: Crude petroleum containing turpentine and other oils. Fraudulently represented as a relief for all scurbitic and rheumatic disorders, palsy, deafness, etc.—[N. J. 26770; July 1937.]

**Olive Hair Tonic.**—Zala Perfumery Co., Philadelphia. Composition: Essentially denatured alcohol (71 per cent), an oil largely or wholly castor oil (about 19 per cent), and small amounts of glycerin, resorcinol, perfume and coloring. Fraudulently represented as a remedy for dandruff, eczema, falling hair, etc.—[N. J. 26772; July 1937.]

**Olive Hair Oil.**—Zala Perfumery Co., Philadelphia. Composition: Essentially petrolatum with a fatty oil (about 2 per cent), and a small amount of resorcinol. Not a "Genuine Italian" product, as represented. For dandruff, eczema, falling hair, etc. Fraudulent therapeutic claims.—[N. J. 26773; July 1937.]

**Chambers' Pills.**—Chambers' Medicine Co., St. Louis. Composition: Essentially saltpeter, potassium carbonate and plant drugs including buchu, coated with chalk and green-colored sugar. Fraudulently represented as a remedy for kidney and bladder disorders, rheumatism, dropsy, etc.—[N. J. 26773; July 1937.]

**Chambers' Cold Tablets.**—Chambers' Medicine Co., St. Louis. Composition: Essentially acetanilid and plant drugs, including a laxative. Fraudulently represented to have "no bad effects" and to be a remedy for la grippe, coughs, fevers, etc.—[N. J. 26773; July 1937.]

**Help Nature Tablets.**—Chambers' Medicine Co., St. Louis. Composition: Essentially phenolphthalein and plant drugs, including a laxative. Fraudulently represented as a remedy for stomach, liver and blood disorders.—[N. J. 26773; July 1937.]

**Silver Crown Hair-Scalp Tonic.**—Silver Crown Remedies Co., Kingston, N. Y. Composition: Essentially water, alcohol (from 1 to 1.6 per cent by volume), quinine hydrochloride, glycerin, and small amounts of iron and sodium compounds, sulfates, perfume and color. For dandruff, falling hair, eczema, etc. Fraudulent therapeutic claims.—[N. J. 26774; July 1937.]

**Okasa-Silver for Men.**—Hormo Pharm G. M. B. H., Berlin, Germany. Composition: Essentially animal glandular material and plant substances, including flour and cacao. For "diseases of men." Fraudulent therapeutic claims.—[N. J. 26778; July 1937.]

**Okasa-Gold for Women.**—Hormo Pharm G. M. B. H., Berlin, Germany. Composition: Essentially animal glandular material and plant substances, including flour and cacao. For female disorders. Fraudulent therapeutic claims.—[N. J. 26778; July 1937.]

**Sweet's Cough Balsam.**—Sweet Mfg. Co., Inc., Pittsburgh. Composition: Essentially plant drug extracts including wild cherry compound, pine tar, chloroform, alcohol (5.7 per cent by volume), sugar and water. Fraudulent therapeutic claims.—[N. J. 26786; July 1937.]

**Sweet's Rheumatic Remedy.**—Sweet Mfg. Co., Inc., Pittsburgh. Composition: Essentially acetphenetidin (1.95 grains per tablet), potassium iodide, sodium salicylate, caffeine and extracts of plant drugs. Fraudulent therapeutic claims.—[N. J. 26786; July 1937.]

**Lagreen's Famous Healing Oil (Rattlesnake Oil).**—Standard Sales Co., Birmingham, Ala. Composition: Essentially kerosene and volatile oils, including mustard and sassafras. For rheumatism, colds, headache, pneumonia, etc. Fraudulent therapeutic claims.—[N. J. 26788; July 1937.]

**Life-Aid.**—Life-Aid Laboratory, Chicago. Composition: Essentially sulfates of sodium, magnesium and calcium, with sulfuric acid, sugar and water, and small amounts of salicylic acid, iron phosphate, saccharin and red coloring. Fraudulently represented as a remedy for indigestion, gastritis, rheumatic pains, nervousness, etc.—[N. J. 26790; July 1937.]

**Colac Pile Pills.**—Vasco Products, Inc., Brentwood, Md. Composition: Iron and magnesium oxides, chalk, extracts of plant drugs and a tar-like material in chocolate-coated pills. For hemorrhoids and other rectal disorders. Fraudulent therapeutic claims.—[N. J. 26793; July 1937.]

**Heptuna.**—Hepatin, Inc., Chicago. Composition not stated. Falsely represented as to vitamin B constituency, whereas no appreciable amount of it was present.—[N. J. 26796; July 1937.]

**Juice-O-Veg.**—Juice-O-Veg, Inc., New York. Composition: Water, 95 per cent, with plant juices and a negligible proportion of salts of iron, calcium, manganese, magnesium, potassium and sodium, including phosphates and silicates. Fraudulently represented to contain vitamins and to have tonic effects.—[N. J. 26801; July 1937.]

**Moxon's Liniment.**—Moxon Liniment Co., Mount Clemens, Mich. Composition: Essentially ammonia (not less than 7 per cent), water, alcohol, camphor and plant drug extracts. For rheumatism, dandruff, head pains, bunions, etc. Fraudulent therapeutic claims.—[N. J. 26803; July 1937.]

**Indian Remedy.**—Ponca Drug Co., Ponca City, Okla. Composition: Essentially epsom salt (163 grains per fluid ounce), a minute amount of iron compound, and water. Fraudulently represented as a cure for liver, kidney and stomach disorders, influenza, ague, etc.—[N. J. 26805; July 1937.]

**Old Indian Liniment.**—Ponca Drug Co., Ponca City, Okla. Composition: Essentially kerosene, with small amounts of mustard and eucalyptus oils, and camphor. For burns, ulcers, nervousness, rheumatism, etc. Fraudulent therapeutic claims.—[N. J. 26805; July 1937.]

**Stekete's Tablets for Worms.**—Hazeltime & Perkins Drug Co., Grand Rapids, Mich. Composition: Essentially saltpeter, sulfur, a laxative plant drug, and ground wormseed. Fraudulent therapeutic claims.—[N. J. 26807; July 1937.]

**Stekete's Powders for Worms.**—Hazeltime & Perkins Drug Co., Grand Rapids, Mich. Composition: Saltpeter, sulfur, phenolphthalein and wormseed. Fraudulent therapeutic claims.—[N. J. 26807; July 1937.]

**Wonder Health Water.**—Wonder Health Water Co., Hot Springs, Ark. Composition: "A lightly mineralized, slightly alkaline mineral water of approximately the same composition of numerous city water supplies throughout the country." Fraudulently represented as having medicinal effects.—[N. J. 26809; July 1937.]

**Nox-A-Beil.**—Nox-A-Beil Laboratories, White Pigeon, Mich. Composition: Essentially iron, calcium and magnesium compounds including carbonates, phosphates, sulfates and chlorides, and talc, sugar, starch and a fatty material. Fraudulently represented as a cure for boils, carbuncles, tonsillitis, abscesses, ulcerated teeth, etc.—[N. J. 26811; July 1937.]

**Antiseptel.**—Giustino Sallusto Co., New York. Composition: Essentially boric acid, zinc sulfate and menthol. Bacteriologic tests showed it was not antiseptic when used as directed. Fraudulently represented as a disinfectant and antiseptic when used as a vaginal douche, "disinfecting the female sexual organs . . ."—[N. J. 26812; July 1937.]

**Lane's Pills.**—Charles E. Lane & Co., St. Louis. Composition: Essentially calomel, a laxative plant drug, sugar, and small amounts of ferrous carbonate and strychnine. For stomach and liver disorders, excesses, etc. Fraudulent therapeutic claims.—[N. J. 26813; July 1937.]

**Stewart's (Dr. Mary E.) Antiseptic Powder.**—American Pharmaceutical Co., Inc., New York. Composition: Essentially boric acid, zinc sulfate, flavored with eucalyptol and wintergreen. Not antiseptic when used as directed. Fraudulently represented as a remedy for various vaginal disorders.—[N. J. 26814; July 1937.]

**Lane's Tea.**—Kemp & Lane, Inc., LeRoy, N. Y. Composition: Claimed to consist of senna, anise seed, fennel seed, licorice root, elecampane root and coriander seed. Specimen was reported infested with insects. Fraudulently represented as a remedy for "faulty intestinal elimination."—[N. J. 26816; July 1937.]

**Vacher-Balm.**—James F. Stras, LaCrosse, Wis. Composition: Essentially menthol, oil of eucalyptus and petrolatum. For catarrh, croup, etc. Fraudulent curative claims.—[N. J. 26820; July 1937.]

**Bol Lecznik Liniment.**—Reliable Merchandise Co., Chicago. Composition: Alcohol (60.8 per cent), chloroform (4.6 minims per fluidounce), ether, ammonia, red pepper, water and volatile oils such as peppermint and mustard. Mishranded because the proportions of alcohol, ether and chloroform were not declared, and because of fraudulent therapeutic claims.—[N. J. 26825; July 1937.]

**Musterdone.**—Reliable Merchandise Co., Chicago. Composition: Camphor, menthol, salicylic acid, wintergreen oil and volatile mustard oil, in petrolatum. Fraudulently represented as a remedy for sore throat, tonsillitis, neuralgia, rheumatism, etc.—[N. J. 26825; July 1937.]

**Universal Kidney, Liver and Stomach Tea.**—Reliable Merchandise Co., Chicago. Composition: Dried herbs and seeds including anise, lavender and senna. Fraudulent therapeutic claims.—[N. J. 26825; July 1937.]

**Universal Stomach Drops.**—Reliable Merchandise Co., Chicago. Composition: Alcohol, water, glycerin, red pepper, a laxative plant drug and peppermint oil. Fraudulent therapeutic claims.—[N. J. 26825; July 1937.]

**Universal White Pine Cough Balsam.**—Reliable Merchandise Co., Chicago. Composition: Pine tar, salicylic acid, resinous material, alcohol and water. Fraudulent therapeutic claims.—[N. J. 26825; July 1937.]

**Mase Zywokostowa Uceo Salve.**—Reliable Merchandise Co., Chicago. Composition: Menthol, camphor, eucalyptol, oil of wintergreen and salicylic acid, in petrolatum. For tonsillitis, neuralgia, rheumatism, stiff neck, etc. Fraudulent therapeutic claims.—[N. J. 26825; July 1937.]

## Correspondence

### SPREAD OF THE VIRUS OF POLIOMYELITIS

*To the Editor:*—In a recent issue of *THE JOURNAL* (August 13, p. 605) Sabin reported that poliomyelitis was produced when he injected the virus in the tonsillopharyngeal area of *Macacus rhesus* monkeys. He indicated that after tonsillopharyngeal injection the virus probably progressed along peripheral nerves to the bulbar nuclei, thereby producing bulbar palsy.

That virus can spread along nerves of the upper part of the gastrointestinal tract to the medullary area has been demonstrated in our laboratory. How bulbar palsy might develop in the human being has been previously discussed (Toomey, J. A.: Poliomyelitis, *Am. J. Dis. Child.* 50:1362 [Dec.] 1935). The possible pathways of infection from the gastrointestinal tract, including the one from the glossopharyngeal area, were outlined in a recent publication (Toomey, J. A.: Round Table Discussion on Poliomyelitis, *J. Pediat.* 7:279 [Aug.] 1935, fig. 1). When the isolated seventh nerve (Toomey, J. A.: The Seventh Nerve as a Possible Pathway for the Transmission of the Virus of Poliomyelitis, *Am. J. Dis. Child* 51:58 [Jan.] 1936), the taste buds of the tongue (*id.*, *ibid.*) or the vagus nerve itself was injected (Toomey, J. A.: Experimental Production of Bulbar Poliomyelitis, *Proc. Soc. Exper. Biol. & Med.* 32:628 [Jan.] 1935) a distinct type of bulbar poliomyelitis occurred. Five of the eight *Macacus rhesus* monkeys which were given vagal injections developed the disease; four of the five had a bulbar type of paralysis, and the symptoms in four came on in from three to six days after injection. The disease was produced earlier than when the virus was injected intracerebrally.

After operation about the oral cavity, as elsewhere, there are new vessels, new gray nerve fibers and cut nerve ends, so that the natural chances for absorption of the virus should be increased; therefore the possible dangers of operations about the oral cavity during seasons when there is a high incidence of poliomyelitis is properly emphasized.

JOHN A. TOOMEY, M.D., Cleveland.

### MODE OF ACTION OF INSULIN IN SCHIZOPHRENIA

*To the Editor:*—Neither Dr. Ernst Gellhorn's original article nor Dr. Friedman's communication add much light to the seeming puzzle of the action of insulin on the nervous system in schizophrenia. Their confusion arises from the indiscriminate massing of chemical and physical evidence with what Dr. Kettering would call too much meaningless scientific verbiage.

The faculties of the mind are discernible only through biochemical reactions expressed or observed in terms of physical activity or inaction. Consequently the psyche—from the standpoint of natural science—is eluctable only through an understanding of its dependent physical phenomena—electrical, chemical, physical—which are subject to equivalent translation, since they are merely aspects of a unitary process. Brain wave recordings, lie detections, chronaxias, electrocardiograms are the electrical "shadows," as heat and size (growth, decay, atrophy) are the physical reflection of matter—organic and inorganic chemicals—ionized and in motion in solution.

Physiologic activity is accompanied by the production of organic acids for whose adequate neutralization by the way of catabolism dextrose is essential. Dextrose is necessary in the normal respiration or metabolism of tissues. It is accumulated, stored, fixed, condensed or polymerized as glycogen in the tissues for this purpose in states or conditions of relative

inactivity (rest). The same result is obtained medically by the application of the chemical principle of increasing the concentration of the substances which force the reaction in the opposite direction. This is done by the administration of insulin with dextrose, for though we speak much of the treatment of schizophrenia with insulin it must not be overlooked that it is an accompaniment of dextrose therapy, more likely than not in a saline medium which also is no inconsiderable factor.

Our psychiatrists have suddenly found themselves possessed of a method of treatment which, though psychic in its effects, is not "psychic" in the intent of its application. And much as they emphasize the need of "expert skill" in its application there is reason to fear that they are no more competent in its use than is an intern in the treatment of diabetes mellitus, for shock is not an essential feature but, rather, a complication to be avoided. Since the effectiveness of the measures is dependent on the principles that obtain in the care of diabetic patients under insulin there can be no more reason to look on the development of shock less fearfully than does the internist in the care of persons with diabetes.

JOHN F. QUINLAN, M.D., San Francisco.

### PROTEIN RESTRICTION IN NEPHRITIS

*To the Editor:*—According to current concepts of renal physiology, the end products of protein metabolism are excreted into the urine without any effort on the part of the kidney. That is to say, urea, sulfate and phosphate, along with most of the other constituents of the urine, pass the glomerular capsule by the physical process of filtration, energy being supplied by the heart. The work of the kidneys is carried on by the renal tubules; it is chiefly concerned with resorption from the glomerular filtrate of water, dextrose and physiologic salts which must be retained by the body. This work is rather constant and independent of the diet.

Nevertheless, as brought out in the recent paper of Drs. Murphy and Rastetter discussed by Dr. Addis (*THE JOURNAL*, August 20, p. 668), restriction of protein in nephritis continues to be practiced with a view toward putting the kidneys at rest.

Aside from theoretical considerations, clinical evidence also offers little support for the practice of protein restriction. The work of Keutman and McCann was mentioned in the paper. They found that a high protein diet in acute nephritis neither retards recovery nor aggravates hematuria.

We are just a trifle slow in getting our medical practice on a physiologic basis.

A. P. BRIGGS, M.D., Augusta, Ga.

### "CONTRAINDICATED BACTERIOPHAGE THERAPY"

*To the Editor:*—In reference to the editorial comment "Contraindicated Bacteriophage Therapy" (*THE JOURNAL*, August 6) I am glad to find this problem brought to the attention of the medical profession.

In my hands, bacteriophage therapy has frequently been distinctly beneficial against staphylococcal infections when used locally. I have had little experience with antistreptococcus bacteriophages because of their extreme specificity. For each case, however, bacteriophage was not employed until it had been developed on the particular infecting organism and had reached a high level of efficiency (at least  $1 \times 10^{-7}$  by serial dilution) against it. This was achieved by a process of repeated contacts and filtrations (Goldsmith, N. R.: A Procedure for the Preparation of Autogenous Bacteriophage for Therapy, in *Clinical Laboratory Methods and Diagnosis*, St. Louis, C. V. Mosby Company, 1935, pp. 770-771).



Further, frequent tests were made of the effectiveness of the bacteriophage against later cultures from the lesion, and whenever the resistance of the organism had increased new batches of bacteriophage were prepared against the latest culture. This all entails considerable work, but is, I believe, probably the only way at present to use bacteriophage safely and effectively. I hence feel that stock or commercial bacteriophage preparations, no matter how potent against any or several strains of bacteria when prepared and ampuled, are relatively worthless when used for a specific case.

NORMAN R. GOLDSMITH, M.D., Pittsburgh.

#### DEATHS FROM TYPHOID IN MIAMI

*To the Editor:*—Through an unfortunate statistical error, which should have been detected by me, you were advised that the number of typhoid deaths in Miami in 1937 was eight. The actual number was six. Two of these were of nonresidents, ill on arrival, having contracted their sickness before entering Florida. On the basis used last year (127,600 population), the first figure gave the rate per hundred thousand of population of 6.3, as used in the article appearing in the July 30 issue of THE JOURNAL. When 6, the correct figure, is used, the rate is 4.7. This year's rates will be based on an estimated resident population of 140,000, of which 110,000 are white persons and 30,000 Negroes.

GEORGE N. MACDONELL, M.D., Miami, Fla.

Director of Public Health.

#### TRAUMA AND APPENDICITIS

*To the Editor:*—In reply to Dr. Royal H. Fowler (THE JOURNAL, July 30, p. 466) and to add to the voluminous literature on this subject I will report this case:

A farmer lad aged 21 with absolutely no history of gastrointestinal trouble, was kicked by a cow, while milking. The blow was an indirect one, as the rim of the pail was forcibly driven across the region of the umbilicus and right lower quadrant. Immediately after the trauma he suffered abdominal pain, felt weak and nauseated and was unable to eat. For the next six days, anorexia was present with abdominal pain referable to the middle and right lower quadrant. Nausea was present but he had not vomited. His parents brought him to my office after the end of the sixth day. He appeared pale and very ill. A cursory examination of the abdomen revealed a mass the size of an orange in the right lower quadrant. Clinically I thought it was a hematoma but on taking his temperature, which was 101, a blood count was done. This revealed 4,400,000 erythrocytes, 21,000 leukocytes, 75 per cent hemoglobin, 76 per cent polymorphonuclears and 24 per cent lymphocytes.

A diagnosis of appendical abscess was made and a completely disintegrated retrocecal appendix with abscess formation was found at operation. Rubber tissue drains were inserted into the abscess cavity, the suprapubic pouch and up the lumbar gutter to the liver bed. Recovery after six weeks of drainage was complete.

I am unable to offer any other explanation but that the contents of the cecum were forcibly squeezed into the appendix with subsequent traumatic rupture. The clinical course checks perfectly.

After all, from a medicolegal standpoint the appendix always is supplied with colon bacilli and any agent dispersing it in the peritoneal cavity is the active traumatic cause. Outside of previous disease and even in the presence of previous disease, many industrial commissions hold that the disabling trauma is responsible for the breakdown of the part involved. At least the report of this case may bring forth more data, pro and con.

RONALD B. ROGERS, M.D., Neenah, Wis.

### Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

#### FACE INFECTIONS AND INTRACRANIAL COMPLICATIONS

*To the Editor:*—By what routes may pyogenic infections of the upper lip and vestibule of the nose cause fatal intracranial complications? What are the common serious complications which may occur with pyogenic infections involving the upper lip and vestibule of the nose? Can you supply any references in the literature or recent textbooks dealing with infections in these regions?

M.D., Ohio.

ANSWER.—The most direct route is from the nose and extends along the anterior and posterior ethmoid veins to the superior ophthalmic vein, which opens into the cavernous sinus without valves. The most frequent direct route from the upper lip and the next most direct one from the nose to the cavernous sinus extends along the external, the labial and the nasal veins to the anterior facial, the angular, the nasofrontal and the superior ophthalmic vein.

Another direct but less frequent route of infection is from the nasal and labial veins to the perforating branches of the anterior facial which anastomose with the inferior ophthalmic vein. This partly empties directly into the cavernous sinus and sends branches to the superior ophthalmic and others to the pterygoid venous plexus. Infection may extend from the nose or lip to the pterygoid plexus along either anastomosing branches from the anterior and posterior ethmoid veins or anastomosing branches to the plexus from the sphenoparietal veins. Extension of infection from the pterygoid venous plexus to the cavernous sinus may spread along collateral veins, passing through the foramen ovale, the foramen lacerum, or more indirectly along anastomosing branches to the middle meningeal vein and other collaterals to the sphenoparietal sinus and to the cavernous sinus. Infection may extend indirectly along the anterior facial vein and its branches to the supra-orbital or frontal veins, which anastomose with the diploic veins. These anastomose with local branches to the cavernous sinus and also with branches leading to the sphenoparietal sinus, which sends collaterals to the cavernous sinus.

Unfortunately the most direct route from the nose is along the anterior and posterior ethmoid veins to the superior ophthalmic vein, all of which are inaccessible for ligation. The deep perforating branches of the anterior facial vein to the inferior ophthalmic vein also are inaccessible. Clairmont (quoted by Christopher, Frederick: *Minor Surgery*, ed. 3, Philadelphia, W. B. Saunders Company, 1936) has advocated both proximal and distal ligation of veins in furuncles of the face. These veins should be double ligated and completely cut across.

The more frequent serious complications are spreading thrombophlebitis along the veins to the cavernous sinus or to the sphenoparietal sinus with thrombosis, suppuration and meningitis; septicemia, and pyemia with metastases to various viscera. All infections on the anterior part of the face and especially on the upper lip and nose should be treated conservatively by absolute rest to the facial muscles, warm compresses, avoidance of early incisions and prevention of trauma. Ligation of veins, especially of the angular vein, to check a spreading infection may be life saving but must be done early. Incisions are contraindicated in the early stages, but occasionally incisions for evacuation of pus may be necessary in the later stages of suppuration but should be done by an experienced surgeon. Systemic treatment and specific medication or local treatment may be of value depending on the etiology, the course and stage of infection, and the existence of complications or associated diseases.

#### Additional references:

- Dixon, O. Jason: The Pathologic Examination in Cavernous Sinus Thrombosis, *THE JOURNAL*, Oct. 2, 1926, p. 1088.  
Martin, Walton: *Ann. Surg.* 76:13 (July) 1922.  
Cabol: *Boston M. & S. J.* 196:1009, 1927.  
Comer, M. C.: *Southwest. Med.* 11:308 (July) 1927.  
Turner, A. L., and Reynolds, F. E.: *J. Laryng. & Otol.* 41:73 (Feb.) 1926.  
Hinton, J. W.: The Danger of Infection About the Face, *Ann. Surg.* 75:104 (Jan.) 1927.

## PITUITARY AND SCOPOLAMINE IN LABOR

*To the Editor:*—Can you tell me whether J. P. McEvoy, author of the article "Our Streamline Baby" in the *Reader's Digest* for May 1938, is a physician? I have been using pentobarbital sodium (nembutal) for over a year quite successfully in many cases. Can you give an opinion as to the advisability of administering solution of posterior pituitary and scopolamine in all primiparas? What is your reaction to this article? Do you consider it authentic for publication in medical journals? Patients react differently to these agents and I feel that it is not as uniformly successful as this article would indicate. Will you please enlighten me as to the current opinion of leading obstetricians regarding the combination as outlined in this article?

CHARLES A. COFFIN, M.D., Kewanee, Ill.

**ANSWER.**—J. P. McEvoy is not a physician but a well known humorist and writer.

It is not possible with complete safety to use either solution of posterior pituitary or scopolamine as a routine in all primiparas although scopolamine has been used a great deal and is one of the least dangerous of amnics. Solution of posterior pituitary is a dangerous remedy and, even when given in minute doses, can produce rupture of the uterus and death of the fetus in susceptible patients. In toxemias it may cause convulsions. There should be a positive scientific indication for every dose of these remedies administered.

Whenever a doctor sets a day for the labor and starts it either with rupturing the bag of waters or the administration of solution of posterior pituitary he assumes considerable responsibility, first, because it is not known when normal pregnancy terminates, and whether the child, even though large enough, is endowed with sufficient vitality to live outside the uterus, and, second, because certain complications such as prolapse of the cord and tumultuous uterine action can occur. If he adds to this a narcotic, the risks are augmented because, among other reasons, the necessity for operative intervention is increased.

The woman must pay for the relief from the pain of labor, and perhaps also the baby. Recent studies by Courville, Schreiber and Gates show that anoxia of the brain leaves permanent damage in its structure, and the babies are often anoxicemic during labor and for hours afterward.

## LARGE PERFORATION OF NASAL SEPTUM

*To the Editor:*—A patient has a large perforation of the nasal septum (postoperative). Can you suggest what substance would be most suitable for an artificial septum, so that the patient can remove, clean and replace it?

LOUIS SCHWARTZ, M.D., New York.

**ANSWER.**—Since the perforation is a large one it would obviously be impossible for the patient to pass a prosthesis through the nares that would be large enough to close the hole. Neither would it be possible for such a prosthesis to remain accurately in situ even assuming that the patient was able to introduce it. Finally, even if such an object were accurately placed within the nose it would soon cause so much irritation as to necessitate its early removal. The use of foreign materials within the nasal cavity in contact with mucous membrane is extremely impractical and has never proved successful. If the perforation is too large to be closed by the usual plastic procedures, it is best left alone. The only inconvenience resulting would be a tendency to crusting and possibly bleeding when the crusts are expelled. To overcome this difficulty the patient may use a mixture of boric acid 5 per cent in equal parts of hydrous wool fat and petrolatum pushed into the nose two or three times daily. Also the occasional application of scarlet red emulsion (scarlet red sulfonate N. N. R. 4 per cent) to the margins of the perforation will help to prevent scabbing.

## METRONOSCOPE AND OPHTHALMOGRAPH

*To the Editor:*—I should like information on the value of the metronoscope and ophthalmograph, manufactured by the American Optical Company.

M.D., Iowa.

**ANSWER.**—The ophthalmograph is an instrument for photographing the eye movements during reading. It is claimed that many cases of reading disability due to poorly coordinated ocular movements may be detected by this instrument and corrected by exercises in rhythmic reading given by the metronoscope. Experience with the ophthalmograph proves that good pictures of the ocular movements can be obtained with it, but some skill and experience are required to use it. It is chiefly of value in clinics for special education and not, it is believed, designed for clinical ophthalmologists. Exercises with the metronoscope should probably be used only when indicated by results of tests with the ophthalmograph. It is not an instrument particularly well adapted for orthoptic training in ordinary cases of muscle imbalance.

## TRICHOMONAS URETHRITIS IN MALE

*To the Editor:*—A patient claims that several physicians have diagnosed his urethritis, with which he has been bothered for two years, as being caused by the trichomonas parasite. It is the same parasite that causes trichomonas vaginalis in women. I should like a discussion of this condition in males. What is the treatment?

L. D. LEBOLD, M.D., Warsaw, Ohio.

**ANSWER.**—Trichomonas urethritis in the male is relatively rare, as judged by the number of recorded cases, but there are probably many cases of "nonspecific" urethritis in which the diagnosis is missed. The organism may be present in either the anterior urethra or the prostatic secretion or both. The symptoms are a urethral discharge, which is generally mucoid at first and later purulent, burning and frequency, and itching along the ventral surface of the penis. The wife of the patient is frequently found to be harboring the organism. Diagnosis is based on microscopic identification of the trichomonad in the fresh smear from the urethra, expressed prostatic secretion or centrifuged urine.

Treatment is by injection of 0.25 per cent silver nitrate solution into both the prostatic and anterior urethra to be retained for three minutes. The injections may be given every other day and may be alternated with a 1:1,000 solution of acriflavine.

If possible, the sexual contacts of the patient should be investigated as a source of infection, especially if there are recurrences.

## CHAULMOOGRA OIL IN ARTHRITIS

*To the Editor:*—An article by Dr. Irving S. Cutter published recently in a newspaper claimed 54 per cent cures in a series of patients treated for chronic arthritis with weekly injections of chaulmoogra oil. I should like to know more about this method of treatment.

VIRGIL GORDON, M.D., Sealy, Texas.

*To the Editor:*—What information can you give me on chaulmoogra oil in the treatment of arthritis? How is it used and where can it be procured?

HERBERT R. SUGG, M.D., Clinton, Iowa.

**ANSWER.**—In 1931 McIlhenny expressed the belief that the use of chaulmoogra oil in the treatment of leprosy might be responsible for the rarity with which "secondary infectious arthritis" occurred in lepers. He therefore gave to patients with atrophic, hypertrophic or mixed arthritis intramuscular injections of the crude oil biweekly and enteric capsules of the oil by mouth daily. McIlhenny's results, as noted in his "preliminary report" (*New Orleans M. & S. J.* 84:182 [Sept.] 1931), were as follows: Of thirty-nine patients so treated, "without exception every patient has shown improvement; many complete relief of symptoms and restoration of function; others arrestment of the disease and reduction of deformities." Improvement was to be expected during the second week of the treatment, and the "average patient" become symptom free in about eight weeks. Brief case reports of only five of the thirty-nine cases were given. In a few cases sterile abscesses developed when the oil was inadvertently injected into fascial planes or periosteum.

The results were equally good in hypertrophic and in the mixed type of arthritis. This observation is of itself sufficient reason to cast doubt on the claim that chaulmoogra oil might be a specific therapy for rheumatoid arthritis, because rheumatoid and hypertrophic arthritis are generally quite distinct.

In 1933 Hebert also published a "preliminary report" (*Tri-State M. J.* 5:1050 [Feb.] 1933). Chaulmoogra oil was given by injection and orally to twenty-one patients with arthritis, generally of the atrophic type; seventeen patients noted improvement of varying degrees. By intramuscular injections Robinson (*Tri-State M. J.* 9:1838 [May] 1937) treated "approximately two hundred cases" generally of the atrophic and secondary infectious (including gonorrheal) types. A mild, febrile reaction resembling that which follows injection of foreign protein generally was induced. Results were not tabulated and notes on only four cases were given. Best results were reported to have been obtained in cases of acute infectious (gonorrheal) arthritis and acute atrophic arthritis. In cases of subacute and chronic atrophic arthritis some analgesia and increased articular motion were provided. Little or no relief was obtained by patients who had advanced atrophic arthritis, hypertrophic arthritis or "mixed" arthritis. Collections of unabsorbed oil had to be removed by aspiration in nine cases and abscesses were drained surgically in two cases.

Forestier and Certonciny (*Gaz. med. de France* 44:911 [Nov. 1] 1937) and more recently Smith, Blocker and Turner (*J. Florida M. A.* 24:586 [May] 1938) have reported their results. The results of Smith and his colleagues in sixty-five cases were as follows: Of fifteen patients who had atrophic arthritis, thirteen became symptom free; of thirty-three patients

who had mixed arthritis, eighteen became symptom free; little or no beneficial effect was obtained by seventeen patients who had hypertrophic arthritis.

In general, proponents of this therapy have failed to analyze their results critically and, from the meager data given, the reader has been unable to form an independent opinion. The length of time these patients have been studied is too short to justify a final opinion on the value of this remedy. The results of the injections are similar to those which long have been obtained from more orthodox measures, especially intramuscular injections of such foreign proteins as milk and intravenous injections of triple typhoid vaccines. Untoward results are rare following the use of these foreign proteins, apparently being not as frequent as the incidence of sterile abscesses after injections of chaulmoogra oil. It is probable that the beneficial effects of injections of the oil result from the mild reaction, resembling that to foreign protein, which is induced. It seems suggestive that although seven and five years have elapsed since the publication of their "preliminary results," neither McIlhenny nor Hebert have reported further. As each of them noted, for chronic arthritis there have been more cures discovered than for any other disease but most of them have been discarded. It remains to be seen whether chaulmoogra oil therapy of chronic arthritis will eventually meet a similar fate.

It is administered intramuscularly in doses of from 3 to 5 cc. or orally in enteric coated capsules in doses of from 0.3 to 1.6 cc. The intramuscular method of administration has been preferred by most workers. Occasionally abscess formation is encountered. The drug can be obtained from any of the large pharmaceutical companies.

#### INTRACTABLE BRONCHIAL ASTHMA

*To the Editor.*—A woman aged 21 has had asthma since the age of 9. Until about five years ago her attacks were mild and were relieved by ephedrine capsules. Since then the attacks have become worse and hypodermic administrations of epinephrine have been required to relieve her. About four months ago she was overcome by a severe attack, and it was discovered within a short time that she had become epinephrine fast. Epinephrine not only failed to relieve her but it affected the heart, and after the injection she became weak and faint with severe headache. Aminophylline  $7\frac{1}{2}$  grains (0.5 Gm.) intramuscularly was given, effecting relief when the attack was severe. This severe attack lasted for about a month. Since then she has still been wheezing slightly and is overcome by severe paroxysms of coughing with a slight amount of expectoration. After the paroxysmal cough, which lasts sometimes from three to five minutes, wheezing and choking is so severe that slight cyanosis at times develops. This is quickly relieved by the oral inhalation of epinephrine chloride 1:100. After this she wheezes only slightly and is quite comfortable until another attack of coughing. When one listens to her chest, there is evidence of bronchial constriction and a large amount of secretion. She does not have a temperature above normal at present. Two months ago she had a temperature of 103 F. and I was afraid she would get pneumonia. Dzsiniich (*Klin. Wchenschr.* 14:1612 [Nov. 9] 1935) discussed the treatment of asthma and urticaria with histamine. There are manufacturing pharmacists who have histamine phosphate 1:1,000 on the market which they recommend for the treatment of asthma. Their plan of treatment is as follows: first injection, 0.05 cc. intracutaneously; next eleven injections, all hypodermically, 0.1 cc., 0.2 cc., 0.3 cc., 0.5 cc., 0.75 cc., 1 cc., 3 cc., 5 cc., 7 cc., 8 cc., 9 cc., respectively; thirteenth to twentieth injections, 10 cc., hypodermically. What is your opinion as to the use of these preparations? Would you suggest that the treatment be used in this case? Small doses may be all right but the larger doses might be harmful. A continuous attack of asthma for four months is beginning to affect her general system.

M.D., Nebraska.

*ANSWER.*—The symptoms given are typical of those found in what is known as chronic intractable bronchial asthma ("chronic asthma" or "status asthmaticus"). Histamine has been used in such cases with varying results.

Gotsch (*Ztschr. f. klin. Med.* 129:593, 1936) tested the reactions to a weak galvanic current and to histamine on forty-five allergic and eighty-two nonallergic persons; he found no relationship between histamine hypersensitivity and allergy or between allergic reactions and the skin reaction to electrical stimulations. He gave histamine transcutaneously by means of a galvanic current of 8 milliamperes; a series of treatments was given. Twenty-one of thirty patients with bronchial asthma were entirely or partially relieved.

Dzsiniich (*Klin. Wchenschr.* 14:1612 [Nov. 9] 1935) believes that in asthma histamine is liberated from the vascular cells of the bronchi and then produces the local and general symptoms of asthma. By introducing exogenously small doses of histamine, one may desensitize allergic persons against the histamine, formed within the system, according to the author. He treated fifteen cases of bronchial asthma with "complete cure" in twelve; the remission has lasted fifteen months. Some patients could tolerate only small doses.

There seems little doubt that histamine or a histamine-like substance is responsible for various allergic manifestations, including bronchial asthma. The use of histaminase, an enzyme supposed to destroy histamine, would seem more logical than the administration of histamine itself. So far, however, the use of histaminase is purely experimental and no clinical results have been reported. If used, histamine should be given cautiously.

Aminophylline intravenously in doses of from 0.24 to 4.48 Gm. diluted to 10 cc. with physiologic solution of sodium chloride has given excellent results in severe cases of bronchial asthma in which the patients were epinephrine fast, according to Herrmann and Aynesworth (*J. Lab. & Clin. Med.* 23:135 [Nov.] 1937). Greene, Paul and Teller (*THE JOURNAL*, Nov. 20, 1937, p. 1712) likewise obtained symptomatic relief with this drug.

Other methods of treatment have also been advocated in "status asthmaticus"; e. g., roengen treatment, large doses of stock or autogenous vaccine, bronchoscopic aspirations, instillations, of iodized oil and intravenous injections of typhoid vaccine. It is noteworthy that some patients in whom epinephrine fails can obtain satisfactory relief if the drug is injected in different locations each time. In desperate cases epinephrine may be injected intravenously, often with dramatic results.

#### IRRADIATION OF PITUITARY

*To the Editor.*—When x-rays are used to reduce the size and activity of the posterior pituitary, how long does such reduction last? Is it in any degree permanent?

RAY H. FISHER, M.D., Oakland, Calif.

*ANSWER.*—The literature makes scant mention of the use of x-rays to reduce the size and activity of the posterior lobe of the pituitary. Harrison (*A Textbook of Roentgenology*, Baltimore, William Wood & Co., 1936, p. 215) says that "when hyperplasia is present, the effect of irradiation upon the posterior lobe is greater than on the anterior, though both show definite response, the clinical results giving the impression that the cells, both chromophobe and chromophil, are very radiosensitive during their stage of hyperplasia." Irradiation directed at the posterior lobe would probably strike the anterior lobe with equal intensity. Eosinophilic and basophilic adenomas of the anterior lobe are quite sensitive to x-rays. Irradiation of these tumors is frequently followed by relief of symptoms and their growth appears to be stopped, at least for a period of several years.

Overactivity of the posterior lobe is thought by some to be responsible for eclamptic states, essential hypertension and the nephropathy of pregnancy. While a large mass of evidence is offered in support of this belief, probably the majority of workers regard it as inadequate. There is apparently no record of irradiation of the pituitary having been done as a treatment for eclampsia and allied conditions in pregnancy. Irradiation of the pituitary and adrenals has been practiced in the treatment of essential hypertension and diabetes mellitus. A considerable percentage of patients are reported as improved after treatment (Culpepper, W. L.; Madden, E. E.; Olson, E. C., and Hutton, J. H.: *Endocrinology* 22:236 [Feb.] 1938), but such improvement is usually not permanent. Further irradiation appears to be required at varying intervals of time. Such treatments, however, are not directed solely at the posterior lobe; neighboring structures are irradiated at the same time.

#### PHENOLPHTHALEIN TEST FOR GASTRO- INTESTINAL ULCERATION.

*To the Editor.*—What is the technic for the phenolphthalein test for ulceration of the gastrointestinal tract?

M.D., Cuba.

*ANSWER.*—The phenolphthalein test for ulceration of the gastrointestinal tract, as described by Dr. Edward E. Woldman in the *American Journal of Digestive Diseases* (5:221 [June] 1938), consists of the administration of 10 cc. of a 1 per cent solution of phenolphthalein in 95 per cent alcohol. The 10 cc. of the phenolphthalein is diluted to 30 cc. at the time that the phenolphthalein is given. This solution should be administered in the morning when the patient is in the fasting state because food may prevent the solution from reaching the lesion in the gastrointestinal mucosa. The patient is instructed not to eat or drink for one hour after taking the phenolphthalein. Specimens of urine are obtained in two and four hours afterward, and if the patient has some condition which may delay the

appearance of the drug, such as acute or chronic nephritis, cardiac failure, fever or dehydration, a six hour specimen may be desirable.

A portion of each specimen of urine is poured into two containers, one to be used for comparison of color with the other portion, to which 10 per cent sodium hydroxide solution is added. The best containers for the specimens are white porcelain evaporating dishes or small beakers placed on white paper. Test tubes are not satisfactory for these color comparisons, for there is not enough depth in the fluid in them to bring out the color. The 10 per cent solution of sodium hydroxide is added with a dropper until no more change in color takes place. Occasionally a precipitate is formed when the alkali is added because of the presence of earthy phosphates which are insoluble in alkaline solution. The urine must be examined promptly, for otherwise false positives may be obtained. The test should not be repeated for several days, as phenolphthalein can be detected in some instances for from forty-eight to seventy-two hours after ingestion.

If the test is positive for free phenolphthalein in the freshly passed urine, as described, a break in the mucous membrane of the gastrointestinal tract is indicated. If the test is negative, the mucous membrane is thought to be intact. In a series of 112 cases, Woldman found the error to be less than 3 per cent, both for positive and for negative results. The reliability of the test depends on the small quantity of phenolphthalein used and prompt examination of the urine.

#### INHERITANCE OF ALBINISM AND MENTAL RETARDATION

*To the Editor:*—Can you give me some light on the transmissibility of albinism? The specific case is that of a young man whose sister is an incomplete albino. If he married a normal girl in whose family there was no known case of albinism, what would be the likelihood of this defect appearing in the descendants? The sister constitutes the only known case in his family history. There is another factor in that a younger brother shows delayed mental development. At the age of 12 he has completed the work of the fifth grade. He was 3 years old before he could talk intelligently. Apparently it is a matter of retardation rather than deficiency. There are no other mental troubles in the family history. What advice can I give this young man about the advisability of marrying?  
M.D., Washington.

**ANSWER.**—Albinism and partial albinism are inherited as recessive traits. A person with normal coloring could carry the gene or genes for albinism. If he married a woman of normal coloring who chanced also to be a carrier, some albino children might result. But if there is no history of albinism in the ancestry of such a woman there would be no possibility of albinic offspring from this mating.

No definite answer can be given to the second part of the question. One would need to have the retarded child examined by experts to determine whether he is a true mental defective. If he were, the condition might be due to birth injury or infantile disease and therefore would not be hereditary. Even if a hereditary defect, however, the trait would be recessive and accordingly transmissible in a manner similar to albinism.

#### "TEBIGEN" TUBERCULIN TEST

*To the Editor:*—The enclosed pamphlet was received from Ernst Bischoff Company concerning their new product, "Tebigen." Accompanying it was a two page list of patients who had been tested by the Gruskin intradermal test for tuberculosis. These tests were conducted at Temple University Hospital. All the patients who gave a positive result to the test were found to have x-ray evidence of tuberculosis, bone tuberculosis or positive sputum. Those who gave a negative reaction showed evidence of healed tuberculosis or at least no evidence of active tuberculosis was found. What do you know about this test?  
M.D., Illinois.

**ANSWER.**—The only printed literature on Tebigen is that distributed by the manufacturers themselves. The circular of the manufacturers, Ernst Bischoff & Co., Ivoryton, Conn., labels the product Dr. Gruskin's Homologous Antigen for the Diagnosis of Tuberculosis and states that it "differs from all previous agents employed for this purpose in that it is not prepared from the tubercle bacillus but from a protein fraction of the fibrin of a tuberculous animal." The method of manufacture is briefly described in the circular, and instructions are given for the performance of the test. The statement is made that reactions are given only in patients with active tuberculosis, and that the test distinguishes human type from bovine type infection.

Dr. Gruskin has published no articles on this subject himself, except a brief preliminary notice entitled "An Intradermal Test

for Tuberculosis," which appeared a year ago in the *Skull*, a magazine published by the School of Medicine of Temple University (pp. 306-307, 1937). The designation Tebigen is not used in this paper. In the brief article in the *Skull* a test is described "based on the principle that in tuberculosis a characteristic protein is developed which is absent if the process is eliminated." The material used in the intradermal test is stated to be essentially a neutralized alkaline extract of the washed fibrin from the blood of tuberculous guinea pigs. The statement is made that following the intradermal injection of a suitable amount of the extract pseudopodia will appear around the injection wheal in a few minutes in positive cases, i. e., cases of clinically active disease, whereas in arrested cases, still positive to the usual tuberculin tests, no such reaction occurs. The negative response in the latter cases is believed to represent immunity.

In the absence of any detailed scientific reports on the test, it would seem inadvisable to use it.

#### SUGAR AND SALT IN LIVER CIRRHOSIS

*To the Editor:*—An article by Dr. Logan Clendening published in a St. Louis paper June 6 treats of reconditioning a damaged liver. He recommends feeding sugar and simple sweets and says that salt is also a valuable food to assist the liver to regenerate. He said that several years ago Dr. Rowntree advocated salt and sugar for cirrhosis and believed that considerable regeneration occurred. For nearly a month I have had under treatment a sedentary man of 57 whose liver was enlarged five fingerbreadths and its firm, round edge protruded. He weighed 245 pounds (111 Kg.) and was 5 feet 10 inches (178 cm.) tall. His complexion was rough and deep red, his palms were deep red (is this characteristic of liver troubles?), there were no varicosities on the trunk, the heart was normal in size and tones, and there was moderate edema to the midleg. His blood pressure was 155 systolic, 70 diastolic. The urine and reflexes were normal. He had drunk an average of a pint of whisky daily for five years. There were moderate neuritic symptoms. The patient has been in the hospital on a low carbohydrate, low fat diet. He has had daily fomentations to the liver and 21 meter diathermy by either the pancake coil or condensation pads (which is better?) for the liver daily. He has also had brewers' yeast and a few injections of thiamin chloride. The liver enlargement has receded about one third. The weight has decreased 8 pounds (3.6 Kg.). Would you recommend sugar and salt for this stage of cirrhosis and in a patient overweight and edematous?  
W. W. BLACKMAN, M.D., Atlanta, Ga.

**ANSWER.**—Sugar is unquestionably of value in cirrhosis of the liver and other forms of hepatic disturbance. It probably could be employed to advantage in this case. Salt in the form of ammonium chloride or ammonium nitrate would probably prove effective. These drugs should be given by mouth in large doses over a considerable period but should be employed only under careful medical supervision. Later, at weekly intervals, mercurial compounds of the merbaphen type might be injected to the advantage of the patient, since with their use large quantities of urine are often voided and ascites is relieved. The fluid intake should be restricted.

Since considerable improvement has accrued from the treatment already employed, it might be wiser to continue along the lines established until it is determined how much more benefit from it may be derived. The deep red color of the palms is not characteristic of liver disease. High color (telangiectasia) of the face, on the other hand, is frequently encountered.

#### YELLOW FEVER

*To the Editor:*—1. Where can I get the Sawyer immunity test for yellow fever? 2. Where can I get information about the experimental work done in producing encephalitis in mice by inoculation with the yellow fever virus?  
EUGENE J. SHANAHAN, M.D., Clyde, Ohio.

**ANSWER.**—1. The reference is to the protection test in mice by the technic published by Sawyer and Lloyd (*J. Exper. Med.* 54:533 [Oct.] 1931). In the United States this test is being made in connection with research at the laboratories of the International Health Division of the Rockefeller Foundation in New York. Requests for tests of serums in cases of scientific or public health interest should be addressed to Dr. J. H. Bauer, who is in charge of these laboratories, at the Rockefeller Institute for Medical Research, York Avenue and Sixty-Sixth Street, New York, preferably in advance of sending the specimen.

2. The discovery of the susceptibility of mice to yellow fever was made by Max Theiler (*Ann. Trop. Med. & Parasitol.* 24:249 [July] 1930). Since then the mouse has been widely used in geographic yellow fever immunity surveys, production of yellow fever vaccine and research in yellow fever, and an extensive literature has grown up. For information about the special parts of the work inquiry may be addressed to the Rockefeller Foundation, 49 West Forty-Ninth Street, New York.

STREPTOCOCCIC TOXINS IN BLOOD

To the Editor:—By what methods can one determine the amount of streptococcic toxin circulating in the blood stream? M.D., New York.

ANSWER.—If the toxin to be assayed is scarlet fever toxin, the blood is drawn and centrifuged after clotting. One tenth cc. of the separated serum is injected intracutaneously in a person giving a positive skin test for scarlet fever susceptibility, and at the same time one skin test dose of scarlet fever toxin is injected intracutaneously in another place in the same person. If a resulting area of erythema at the site of the serum injection is absent or not larger than the area of erythema at the site of the injection of standard toxin, the amount of toxin in the blood is 10 skin test doses per cubic centimeter or less. If it is larger, the serum is diluted to a degree resulting in a cutaneous reaction equal to that of the standard test solution. If it is necessary to dilute 1 to 1 with saline solution there are 20 skin test doses per cubic centimeter of blood.

Erysipelas toxin may be estimated in the same way, standard erysipelas toxin being used as a comparison.

ENDOCRINE TREATMENT OF HYPOGENITALISM

To the Editor:—A white man aged 28 has genitals about the size of the average newborn infant's. Both testicles are undescended. Erection is impossible. Secondary sex characteristics are fairly well developed. The patient has no complaints and is in good physical condition otherwise but wonders if anything might be done to improve his condition. What would you suggest as to therapy and prognosis?

HARVEY L. JORGENSEN, M.D., Marinette, Wis.

ANSWER.—The use of either androgen or the gonadotropic principle of pregnancy urine in the treatment of hypogonitalism (principally during childhood and adolescence) has been successful in many cases. Treatment of the patient with these preparations is worthy of trial and should extend over a period of at least six months. If androgen is used, at least 25 mg., three to four times a week, should be given intramuscularly. If gonadotropic substance is used, from 1,000 to 2,000 rat units should be given every day intramuscularly. The two preparations are equally efficacious. A basal metabolic test should be done and if it is low, adequate doses of thyroid should be given at the same time.

ESTROGENS IN VOMITING OF PREGNANCY

To the Editor:—In the June 25 issue of THE JOURNAL a physician asked the value of estrogen in hyperemesis gravidarum and the suggested dose. The answer stated: "As far as is known, estrus-producing substances have no specific effect in hyperemesis gravidarum. If valuable at all, they most likely act because of their psychic effect." I wish to refer you to a report of fifty cases treated with estrogenic preparations (Hawkinson, L. F.: *Minnesota Med.* 19:519 [Aug.] 1936). These results have recently been confirmed by Shute (*Endocrinology* 21:594 [Sept.] 1937). It seems noteworthy that no adverse report has appeared in the literature during a period of two years. Although the rationale of using estrogen in nausea and vomiting has not been definitely established, the reports of a number of workers who have found relatively low levels of estrogen and high gonadotropic substance in these patients would seem to establish this type of treatment on a clinical basis. Nearly 100 additional cases have been treated in the last two and one-half years and the results continue to be excellent. These patients have been given slightly higher doses than those of the original series. In severe cases daily injections of 10,000 international units of estrogen in oil are given, while in the milder cases the same dose is administered every second to third day.

L. F. HAWKINSON, M.D., Brainerd, Minn.

MALARIA AND VERTIGO

To the Editor:—In Queries and Minor Notes in THE JOURNAL, August 6, appears a discussion entitled "Malaria Not Cause of Vertigo and Restlessness." Your correspondents would draw attention to the fact that Stitt's Practical Blood Work Parasitology contains the following statement: "Hemolysin and endotheliolysin are thrown off at the same time. . . . The endothelial cells take up actively this malarial pigment or hemozoin and are damaged or destroyed thereby. Hematin injections also tend to destroy leukocytes and platelets." McCallum's Pathology states that "at autopsy there is distinct slaty or blackish pigmentation affecting especially the spleen. . . . in the brain, the endothelial cells of the capillaries in the brain substance. . . ." Boyd's Pathology says "The parasites are most numerous in the capillaries of the brain and the spleen. . . . This is probably the cause of the occasional cerebral symptoms." From the clinical point of view chronic malaria would be an additional cause for arrested digestion and consequent food poisoning with arrest of flow of bile. In chronic malaria disturbing symptoms from the nervous system are only second in constancy to those from the digestive-portal systems in our experience.

G. H. FONDÉ, M.D.  
E. C. FONDÉ, M.D.  
Mobile, Ala.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BDARDS

Examinations of state and territorial boards were published in THE JOURNAL, September 17, page 1127.

SPECIAL BDARDS

AMERICAN BOARD OF ANESTHESIOLOGY: An affiliate of the American Board of Surgery. New York, Oct. 21-22. Sec., Dr. Paul M. Wood, 745 Fifth Avenue, New York.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: Written. Various large cities in the country about Oct. 1. Oral. St. Louis, Nov. 11-12. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: Written examinations will be held in various parts of the United States, Oct. 17 and Feb. 20. Application for the February examination must be received on or before Jan. 1. Sec., Dr. William S. Middleton, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: Written examination and review of case histories of Group B applicants will be held in various cities of the United States and Canada, Nov. 5 and Feb. 4. General oral, clinical and pathological examinations for all candidates (Groups A and B) will be given in St. Louis, May 15-16. Applications must be filed not later than sixty days prior to date of examination. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: St. Louis, May 15. Applications must be filed before February 15. Sec., Dr. John Green, 3720 Washington Blvd., St. Louis.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Memphis, Tenn., January. Applications for this examination must be filed with the Secretary on or before Oct. 15. Sec., Dr. Fremont A. Chandler, 6 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Washington, D. C., Oct. 7-8. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PEDIATRICS: Detroit, October 26; Rochester, N. Y., November 13; and Oklahoma City, November 15. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York, Dec. 28-30. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF SURGERY: Part I will be given simultaneously in various centers throughout the United States, Oct. 10. Sec., Dr. J. Stewart Rodman, 225 S. 15th St., Philadelphia.

AMERICAN BOARD OF UROLOGY: New York, Jan. 13-15. Applications must be submitted not later than Oct. 1. Sec., Dr. Gilbert J. Thomas, 1009 Nicollet Ave., Minneapolis.

Rhode Island July Examination

Mr. Robert D. Wholey, chief, Division of Examiners, reports the oral, written and practical examination held at Providence, July 7-8, 1938. The examination covered twenty subjects and included fifty questions. An average of 80 per cent was required to pass. Nine candidates were examined, all of whom passed. Seven physicians were licensed by endorsement after an oral examination. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Georgetown University School of Medicine.....	(1937)	82.7	87
University of Maryland School of Medicine and College of Physicians and Surgeons.....	(1936)	84.5	86
Boston University School of Medicine.....	(1937)	85.2	87
Tufts College Medical School.....	(1937)	85.2	87
Columbia University College of Physicians and Surgeons .....	(1935)	90	
Hahnemann Medical College and Hospital of Philadelphia(1937)		86.2	
Jefferson Medical College of Philadelphia.....	(1937)	82.2	

School	LICENSED BY ENDORSEMENT	Year Grad.	Per Cent
College of Medical "	"	"	B. M. Ex.
Georgetown Unvers	"	"	B. M. Ex.
Johns Hopkins Uni-	"	"	B. M. Ex.
Harvard University Medical School.....	(1923), (1931)	N. B. M. Ex.	
New York Medical College and Flower Hospital.....	(1937)	N. B. M. Ex.	

West Virginia July Report

Dr. Arthur E. McClue, secretary, West Virginia Public Health Council, reports the oral and written examination held at Elkins, July 4-6, 1938. The examination covered eleven subjects and included 110 questions. An average of 80 per cent was required to pass. Thirty-four candidates were examined, thirty-three of whom passed and one failed. Nine physicians were licensed by reciprocity. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Arkansas School of Medicine.....	(1937)	85.3	
Loyola University School of Medicine.....	(1938)	88.4	
Northwestern University Medical School.....	(1938)	86.1	86.4
Rush Medical College.....	(1936)	83.6	(1937) 83
University of Louisville School of Medicine.....	(1937)	84	86.5
University of Maryland School of Medicine and College of Physicians and Surgeons.....	(1937)	84.2	87
Columbia University College of Physicians and Surgeons (1934)		87.6	



Ohio State University College of Medicine.....	(1936)	83.2,	84.4
Univ. of Cincinnati College of Medicine (1935)	84.7,	(1938)	87.6
Western Reserve University School of Medicine.....	(1934)	86.4,	
(1935) 83.9, (1937) 86.5			
Hahnemann Medical College and Hospital of Phila- delphia .....	(1936): 89.9, (1937)	84.7	
Jefferson Medical College of Philadelphia.....	(1937)	85.4	
Temple University School of Medicine.....	(1937)	85.9, 86.7	
Medical College of Virginia.....	(1936)	85.8,	
(1937) 84.1, 85.4, 85.8, 87.5, 87.6, 87.9, 90.6			
Eberhard-Karls-Universität Medizinische Fakultät, Tübing- gen .....	(1930)	80.6	
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin .....	(1914)	83.6	
School	FAILED	Year Grad.	Per Cent
University of Virginia Department of Medicine.....	(1935)	76.2	

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
State University of Iowa College of Medicine.....	(1926)		Iowa
University of Louisville School of Medicine.....	(1937)		Kentucky
Tulane University of Louisiana School of Medicine.....	(1928)		Mississippi
University of Maryland School of Medicine and Col- lege of Physicians and Surgeons.....	(1923), (1934)		Maryland
Ohio State University College of Medicine.....	(1927)		Ohio
Jefferson Medical College of Philadelphia.....	(1935)		Delaware
Marquette University School of Medicine.....	(1932)		Wisconsin
University of Manitoba Faculty of Medicine.....	(1932)		Michigan

### North Dakota July Report

Dr. G. M. Williamson, secretary, North Dakota State Board of Medical Examiners, reports the oral, written and practical examination held at Grand Forks, July 5-8, 1938. The examination covered thirteen subjects and included 100 questions. An average of 75 per cent was required to pass. Seven candidates were examined, all of whom passed. Two physicians were licensed by reciprocity and two physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
Johns Hopkins University School of Medicine.....	(1935)		1
University of Minnesota Medical School (1929), (1937, 2), (1938, 2) .....			5
University of Manitoba Faculty of Medicine.....	(1936)		1
School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Michigan Medical School.....	(1929)		Michigan
Creighton University School of Medicine.....	(1930)		S. Dakota
School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists.....	(1936)		N. B. M. Ex.
Georgetown University School of Medicine.....	(1937)		N. B. M. Ex.

### Minnesota June Report

Dr. Julian F. Du Bois, secretary, Minnesota State Board of Medical Examiners, reports the oral, written and practical examination held at Minneapolis, June 21-23, 1938. The examination covered twelve subjects and included sixty questions. An average of 75 per cent was required to pass. Forty-nine candidates were examined, forty-eight of whom passed and one failed. Six physicians were licensed by reciprocity and one physician was licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Loyola University School of Medicine....	(1932)	85.3,	(1938) 88.4
Northwestern University Medical School.....	(1938)	88.2,	89.6
Rush Medical College.....	(1937)	87.2,	(1938) 86.2
University of Illinois College of Medicine.....	(1936)		89.5
Indiana University School of Medicine.....	(1935)		88
University of Kansas School of Medicine.....	(1934)	86.6,	(1937) 87.5
Tulane University of Louisiana School of Medicine.....	(1934)		85.1
University of Michigan Medical School.....	(1936)		91
University of Minnesota Medical School.....	(1935)		84.1,*
(1937) 86,* 86.5,* 87.5,* 88.1, 88.5,* 89.5,* 90.3,*			
(1938) 83.4,* 85.2,* 85.5,* 85.6, 86,* 86.4, 87,* 87.2,*			
87.2,* 87.4,* 87.6,* 87.6,* 87.6, 88.3,* 89.4,* 90,*			
90.4,* 91.2,* 91.2,*			
University of Nebraska College of Medicine.....	(1937)		85
Ohio State University College of Medicine.....	(1932)		88.1
Jefferson Medical College of Philadelphia.....	(1937)		87.3
University of Pennsylvania School of Medicine.....	(1933)		89.5
Marquette University School of Medicine.....	(1938)	88.1,	91.1
McGill University Faculty of Medicine.....	(1933)	90,	(1937) 87.1
Université de Paris Faculté de Médecine.....	(1935)		86.2
School	FAILED	Year Grad.	
State University of Iowa College of Medicine.....	(1937)		
School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Loyola University School of Medicine.....	(1936)		Illinois
Northwestern University Medical School.....	(1937)		Montana

Rush Medical College.....	(1930)	Illinois
Tulane University of Louisiana School of Medicine.....	(1930)	Louisiana
University of Nebraska College of Medicine.....	(1933)	Nebraska
Marquette University School of Medicine.....	(1937)	Wisconsin
School	LICENSED BY ENDORSEMENT	Year Endorsement Grad. of
University of Minnesota Medical School.....	(1938)	N. B. M. Ex.

\* This applicant has received the M.B. degree and will receive the M.D. degree on completion of internship.

## Book Notices

"Good Morning, Doctor!" By W. A. Rohlf, M.D. Cloth. Price, \$2. Pp. 169, with illustrations. Cedar Rapids, Iowa: Torch Press, 1938.

Here is the magnificently simple story of a great man, though not a prominent man. It is all the more significant because it is typical of the story of country doctors without number who have been serving the people of the United States through storm, flood, disaster and sunshine, through sorrow, perplexity, pain and joy. The story is autobiographic, told with a warm human sympathy delightfully mingled with humor. It is a series of disconnected episodes, which yet give a clear picture of the life of a country boy who struggled against great odds to achieve his ambition to be a country doctor. Typical is the story of his relationship with the clergy. On one occasion he met a minister on his way to the home where the doctor had just attended a patient who died. Dolefully the minister said "First you, then me!" The doctor matches this incident with another, in which he met a minister who had married a couple in whose home the doctor had just attended a birth. To the minister the doctor remarked "First you, then me." These incidents are illustrative of the doctor's close relationship to his patients. In addition to being a physician ready to serve all and sundry under any and all circumstances, he took a keen interest in civic matters. A Boy Scout cabin stands as a memorial to his interest in the Boy Scout movement, in which he is known as Beaver Bill; his friends have erected a stone marker and bronze plaque to commemorate his part in the building of the cabin and in the work of the Boy Scout troop which met in his spacious basement for years. The esteem of his professional colleagues was evidenced in the annual gatherings on his birthday, which grew so large that his home could not accommodate them, and through his election to the presidency of the Iowa State Medical Society. The book is attractively printed and bound and is illustrated with amusing sketches on prescription blanks by one of his associates, who presented him with a book of them, bound with splint boards, catgut sutures and adhesive tape. Such lives as that of this country doctor, who differs from his thousands of colleagues only in that he is more articulate and thus able to put his experiences into this charming chronicle of devotion and service, are a complete answer to the current agitation which would substitute a bureau for the doctor, a dubious efficiency for his unflagging devotion to duty, red tape for human sympathy and understanding, lay control for professional judgment, and politics for the ideals which have made modern medicine what it is. This book should be required reading for all those who, on the basis of little or no understanding, are moving heaven and earth to destroy the profession and the art of medicine.

Les encéphalomyélites de la scarlatine. Par le Docteur Germaine Rambert, de la Faculté de médecine de Paris. Paper. Pp. 139. Paris: Amédée Legrand, 1937.

Two cases are reported; one in a woman 36 years of age who suffered an attack of scarlet fever with stormy onset complicated by nephritis. A severe psychotic disturbance developed. This was unrelated to the febrile period and finally disappeared following an attack of bronchopneumonia. The patient had no personal or family history of mental disease. Samples of cerebrospinal fluid obtained by frequent spinal puncture showed no cellular change. The second case is that of a girl 4 years of age who entered the hospital with an attack of scarlet fever. She became somnolent and had tremor of the hands at the end of the first week when the temperature was falling and the rash fading. The spinal fluid showed 22 cells per cubic centimeter, lymphocytes predominating. A week later unilateral ptosis and exaggerated reflexes were observed. After report-

ing these two cases in detail, the author gives an excellent review of previously reported cases of central nervous system involvement in scarlet fever, classifying them clinically as hemiplegic, convulsive, psychotic, ataxic, diffuse myelo-encephalitic, ocular, neuritic and meningial. Although such complications are comparatively rare in scarlet fever, the possibility of their occurrence should be kept in mind. It is interesting to note that they do not commonly occur during the early, acute stage of scarlet fever but some time later. The author concludes that injury to the central nervous system by toxin during the acute stage of scarlet fever is the determining factor in the later development of such conditions. Scarlet fever antitoxin had not been used in any of the cases reviewed in this work.

**A Survey of Methods of Care, Treatment, and Training of the Feeble-minded Together with a Program for the Future Made at Letchworth Village, Thiells, New York.** State of New York, Department of Mental Hygiene. Paper. Pp. 164, with 17 illustrations. Utica, New York: State Hospitals Press, 1937.

This report is the result of a request of the superintendent of Letchworth Village for a committee to make a dispassionate and disinterested survey of the institution, in order to bring about a progressive program for the next twenty-five years. Letchworth Village is an institution for the feeble-minded located in New York State, which was founded in about 1909 but was authorized in 1907. It is an excellent, progressive, well developed institution and these characteristics are definitely brought to light by the survey of this investigating committee. Experts in various lines were assembled and, as a result, produced a series of reports dealing first with the physical plant as regards its general plan, architecture, sanitation, mechanical equipment, soil conditions and farming. The second part is devoted to a critical consideration of the care of the patient, the third to educational procedure, the fourth to administration and the fifth to statistics and the research being done at the village. Each one of these topics is disposed of singly by an acknowledged expert in each field and, while one comes to the conclusion that Letchworth Village at the present time is highly adequate in each one of the features considered, suggestions are appended at the end of each part of the survey whereby the institution may further be improved. There is an appendix giving a bibliography of work which has been done by members of the staff of the institution. The value of the report lies, first of all, in giving one an idea of how a modern institution of this kind is set up, all its aspects being dealt with in considerable detail. The actual summarizing of the findings is a revelation on how satisfactorily a survey of an institution may be carried out. There is a third value which may be obtained by carefully culling the suggestions and facts from each of the reports, to determine steps which may be taken in the future in this and other similar colonies to improve the work that is being done to care properly for the feeble-minded.

**Alcohol: One Man's Meat.** By Edward A. Strecker, A.M., M.D., Sc.D., Professor of Psychiatry, School of Medicine, University of Pennsylvania, and Francis T. Chambers, Jr., Associate in Therapy, Institute of the Pennsylvania Hospital, Philadelphia. Cloth. Price, \$2.50. Pp. 230. New York: Macmillan Company, 1938.

One of the most encouraging results of the development of modern psychiatric diagnosis and treatment has been a change in the point of view toward alcoholism. Except in a few sanatoriums where the chances of a "cure" were doubtful, little was done until comparatively recently to enable the chronic alcoholic addict to cure himself in order that he might lead a relatively well adjusted life. The senior author of the present book is an able psychiatrist with much experience. He presents for the first time a short, rather simple, volume describing what is being done and what can be done for the alcoholic addict, bearing in mind the new point of view that alcoholism is a mental disease which, in the hands of modern psychiatrists, can be cured in many cases. The present work is not deep. The authors present little scientific evidence dealing with the mechanisms, diagnosis or treatment of alcoholism but rather present, in a very definite fashion, two concepts—the first one comprising about half of the book—the concept of mental disorganization. Alcoholism is a flight from reality or is in other ways a symptom of social and mental maladjustment. The

second concept covers some of the treatment procedures which may be used in correcting this condition. Some of these are encouragement, adjustment of the home situation, particular types of psychotherapy which will enable the man to understand what he is up against and to battle against his problem, hobbies and other technics. These are dealt with briefly. Their rationale is not explained and it is relatively simple material for the experienced psychiatrist. As a whole the book is a level headed, uncomplicated work and can be used with profit by psychiatrists who have a deeper understanding of the mechanisms and methods which the authors only lightly touch on. It is probably the beginning of a series of works which are likely to be published from time to time giving specific directions for treatment and a deeper understanding of the diseases arising from ethylism. There is no bibliography but there are a number of references to the literature in the form of footnotes. There are a few citations of cases but no lengthy case histories. The book is too technical for the layman. It does bring together some material which should be of use to the physician if he has any problems concerning the alcoholic addict. How well the authors' procedures can be followed by others can be determined only by time.

**Salaries in Medical Social Work in 1937.** By Ralph G. Hurlin, Director, Department of Statistics, Russell Sage Foundation, New York. Paper. Price 20 cents. Pp. 34. New York: Russell Sage Foundation, 1938.

The main purpose of the study was to show how much improvement, if any, was realized in salaries in the field of medical social work between 1933, when the previous study was made, and 1937. No recognized standards of medical social work have yet become general enough to be accepted. The investigation showed that the lowest, median and highest salaries of those investigated were as follows:

#### Annual Salaries

Position	No. of Workers	Lowest	Median	Highest
Headworker.....	463	\$ 780	\$2,052	\$5,072
Supervisor or assistant headworker.....	61	1,500	2,160	3,700
Caseworker.....	1,037	720	1,632	2,700
Psychiatric caseworker.....	120	508	1,534	2,650
Clinic worker.....	83	672	1,560	2,472
Admission worker.....	57	840	1,560	2,880
Worker in training.....	32	624	1,440	1,740
Total.....	1,833			

Salaries of all the classes of workers showed increases during the last four years, the greatest increase being for "headworkers," among whom it amounted to about 11 per cent. The number of medical social workers increased 8 per cent.

**Diet and High Blood Pressure.** By Dr. I. Harris, Honorary Physician, Liverpool Heart Hospital. Cloth. Price, \$3.50; 10s. 6d. Pp. 196. Toronto: Longmans, Green & Co.; London: Hogarth Press, 1937.

This little book is prepared for lay consumption. In it Harris tries to preach his gospel with a fervor and enthusiasm truly unitarian in point of view. His "theories" anent the pathogenesis of arterial hypertension, as presented in an earlier, more medical, monograph ("High Blood Pressure"), have been previously reviewed in *THE JOURNAL* (Oct. 23, 1937, p. 1389). Therein he attempts to convince by reiteration that the primary etiologic responsibility in hypertensive arterial disease rests on high protein dietary and the renal injury through the implied necessity of increased renal work in excreting larger quantities of nitrogenous debris and especially urea. In the previous review it was remarked that this thesis is untenable in the light of modern scientific knowledge of hypertensive arterial disease. Harris's little book is fruitful of such dogmatic and almost bigoted statements as "All that is necessary, so far as eating is concerned, is that *everybody* should realize that *every* morsel of food taken which is unnecessary damages the human machinery" and "I am happily in a position to give definite guidance in regard to food, which, if acted upon, I *know* will reduce the incidence of high blood pressure materially and prolong life" (italics by the reviewer). Elsewhere he becomes poetically prophetic over the immense benefits to be derived if every one would but follow his regimen blindly. There are portions here and there where

his advice appears sound and logical, particularly anent the fluid intake and in certain of the appended diet tables. But the book as a whole has little merit and is pedantic, misleading and biased with unproved theory. To the reviewer the whole manner of presentation is that of a sincere but misled zealous faddist. The evils of obesity are distorted as though the satisfaction of a hearty gastronomic appetite were a cardinal sin.

**A Textbook of Histology.** By Alexander A. Maximow and William Bloom, Associate Professor of Anatomy, University of Chicago. Third edition. Cloth. Price, \$7. Pp. 668, with 542 illustrations. Philadelphia and London: W. B. Saunders Company, 1938.

The late Professor Maximow had begun before his death a textbook of histology, which was completed by Bloom in 1930 and which was so successful that a second edition appeared in 1934. Continued advances in histology necessitated an extensive revision for the third edition. Prof. C. Judson Herrick, who wrote the chapters on the nervous tissues for the previous editions, is replaced by Prof. Stephen Polyak. It is almost impossible to express adequately the fine organization and beautiful illustration of this textbook. Although of course it would be thoroughly inadvisable for a medical student to study histology without actually seeing the tissues under the microscope, if the latter were impossible the book is so profusely illustrated that a student could get, by studying it alone, a remarkable mental picture of the microscopic appearance of tissues. The attempt to avoid most controversial issues while keeping the book abreast of the advances in histology and histophysiology has been generally successful. While the book can need no recommendation for medical students, it may also be extraordinarily useful to those who have occasion to review and extend their knowledge of microscopic anatomy. For purposes of reference the index is entirely adequate.

**Stehzahn Jahre Strahlentherapie der Krebse; Zürcher Erfahrungen, 1919-1935.** Von Hans R. Schulz und Adolf Zupplinger. Paper. Price, 32 marks. Pp. 340, with 95 illustrations. Leipzig: Georg Thieme, 1937.

This book gives a survey of 2,529 patients admitted for radiation therapy during the years 1919 to 1935 in the Roentgen Institute of the University of Zurich. This institute functions as the central radiotherapeutic unit for a large part of Switzerland. The book represents an important contribution to the radiologic literature, as it gives a critical and honest cross section showing the radiotherapeutic possibilities up to the time of publication in an unselected material in which only 1.7 per cent of patients were not followed. Every case admitted to the institute is accounted for. The cases treated by the authors were particularly unfavorable for therapy because the most favorable lesions for radiation therapy, such as carcinomas of the skin and cervix, represent only a small minority of their cases. Most of these lesions were treated in the gynecologic and dermatologic clinics. Most of the cases in general were in a far advanced stage of disease, as evidenced by the fact that only 24 per cent of them were technically operable. Cancer of the upper respiratory tract and pharynx represent about 30 per cent of the material, breast carcinoma 16 per cent, carcinoma of the esophagus and gastrointestinal tract 10 per cent; only 5 per cent were carcinomas of the skin and natural openings of the body and 1 per cent carcinoma of the cervix. Eighty per cent of the patients were treated by radiotherapeutic procedures exclusively, 20 per cent in combination with surgery. The basic radiotherapeutic procedure used was roentgen therapy, which was indicated in 85 per cent of all cases, whereas a local radium application alone or in combination with x-rays was used in approximately 15 per cent. The radiation technics employed were used consistently over a period of years without rapid change of the technical procedure, in this way allowing definite conclusions as to the value of the method.

During the first period covered by the report, from 1919 to 1928, the treatment was given in the form of large doses followed by smaller additional doses. Since 1928, following Coutard's experience, the treatment was consistently conducted in a protracted fractional form over several weeks. Alive and symptom free three years after treatment, or dead from intercurrent disease after a three year symptom free interval, were 17 per cent of all patients treated, 13 per cent after five years. The cure rate in the operable cases was 43 per cent, in the inoperable ones 9 per cent. Favorable palliative results were accomplished

in 54 per cent of the cases. This amounts to a favorable effect, either palliative or curative, in 70 per cent of the cases. It is interesting to compare the improvement of the results with the improvement in the therapeutic procedures, as can be seen from a comparison of the results in the first period of treatment before 1928 with the second period, as indicated by only 11 per cent symptom free for at least one year during the first period and 30 per cent during the second period. For certain locations, such as the pharyngeal and laryngeal carcinomas, the difference is considerably more marked than in this average.

The results in tumors of different locations are carefully arranged in detail.

**The Patient and the Weather.** By William F. Petersen, M.D. With the assistance of Margaret E. Milliken, S.M. Volume IV, Part 3: Organic Disease; Surgical Problems. Cloth. Price, \$10. Pp. 651, with 482 illustrations. Ann Arbor, Michigan: Edwards Brothers, Inc., 1938.

The earlier volumes of this massive work have been reviewed in these pages. Like the others, the present work is a thoroughgoing highly developed analysis of the relationship of certain clinical changes with regard to changes in temperature, polar fronts and other meteorological changes. The book is full of case histories, including reports from the literature; there are a number of graphs in which changes in the weather are correlated with changes in clinical signs; there are several tables, all of which have to do with the thesis which this author has been following for so many pages that weather changes are accompanied by vascular changes which aggravate symptoms and in many cases actually change the course of a disease. The topics covered in this book are infection, inflammation, ulcer of the stomach, Meckel's diverticulum, gallbladder disease, acute pancreatitis, appendicitis, ectopic pregnancy, postoperative complications, vascular accidents, drain abscess, meningitis, orthopedic cases and ophthalmologic episode. There is also a chapter entitled "Endemiology of the Surgical Diseases." This is a scholarly and deep work. The points brought out by the author are illustrated by groups of thoroughly discussed individual cases rather than statistics, and the surgeon should be interested in following up Petersen's ideas on this subject.

**Introduction to Ophthalmology.** By Peter C. Kronfeld, M.D., Professor of Ophthalmology, The Peiping Union Medical College. Cloth. Price, \$3.50. Pp. 331, with 37 illustrations. Springfield, Illinois, & Baltimore: Charles C. Thomas, 1938.

From his long experience as a teacher of ophthalmology in Chicago and Peiping, from his varied clinical research work and from his intimate knowledge of both the American and the Viennese schools, the author has produced a textbook which is unquestionably one of the finest of recent works for the medical student of ophthalmology. While the book is intended as "a formulation of principles," it goes much further and provides rational physiologic and clinicopathologic explanations of the difficult problems which confront a physician attempting to gain a useful understanding of the eye and its diseases. The author presents clearly and in a most practical manner the problems of conjunctivitis, which are so important for the general physician. Diseases of the cornea are well described and the subject of interstitial keratitis is given special consideration. The subject of cataract is particularly well discussed. The chapter on injuries should give the general physician a clear understanding of the mechanism of certain eye injuries and particularly of the dangers to the uninjured eye from sympathetic ophthalmitis. The presentation of diseases of the retina is one of the best sections of the book. After devoting a chapter to the physiology of the retinal circulation, Kronfeld discusses admirably the vascular diseases of the eye—the retinal conditions associated with arteriosclerosis and arteriolar sclerosis, hypertension, nephritis and diabetes. The important problem of the pathologic physiology of glaucoma is discussed rather completely. The author treats fully some of the diseases of the optic nerve and clarifies the problem of papilledema. His treatment of some of the practical problems of neuro-ophthalmology is succinct. A chapter is devoted to the pupil as a neuro-ophthalmologic entity which should be useful for the general physician. Of particular benefit to the student is the way in which the author has incorporated comparative data in instructive tables and has tabulated the differential diagnostic points

in diseases with similar symptoms and signs. A number of Bertha Klien's fundus drawings illustrate admirably certain diseases of the fundus in spite of the fact that they are uncolored. Students and practitioners of medicine should read and study this splendid volume with pleasure and profit.

**Emergency Surgery.** By Hamilton Bailey, F.R.C.S., Surgeon, Royal Northern Hospital, London. Third edition. Cloth. Price, 50s. Pp. 852, with 816 illustrations. Baltimore: William Wood & Company, 1938.

This is an extremely workmanlike and practical treatise on emergency surgery. It reflects vividly the large experience and the thoughtfulness of its author. In its fifty-three chapters the entire field of surgical conditions requiring immediate treatment is carefully discussed. Every surgeon will find it enjoyable and profitable reading. The chapters dealing with acute appendicitis and intestinal obstruction are particularly praiseworthy. The illustrations, many of which are in color, are numerous and informative. The frequent use of well chosen illustrative cases vivifies and accentuates the subject matter. Greatly to be commended are the valuable references at the end of each section. It is difficult to find fault with this splendid book, but the reviewer is disturbed by the recommendation of intravenous mercuriodrome and the unfortunate omission of the continuous indwelling suction apparatus of Wangenstein. Moreover, he deprecates the transperitoneal drainage of appendical abscess in one stage. It would seem preferable to pack gauze down to the abscess and allow it to discharge spontaneously after the general peritoneal cavity has been well walled off.

**Hemorrhoids.** By Marlon C. Pruitt, M.D., L.R.C.P., F.R.C.S., Associate in Surgery, Emory University School of Medicine, Atlanta. Cloth. Price, \$4. Pp. 170, with 73 illustrations. St. Louis: C. V. Mosby Company, 1938.

In the text of this volume the author does not pretend to present anything new. He states in his preface that "the questions now are what are the comparative values of the various methods advocated, and is one method more suitable than another for a certain kind of case?" Most of the methods described, as well as the illustrations, are taken from other books with acknowledgment. Much of the remainder of the text and most of the remaining illustrations present features embodied in discussions and illustrations that have been published in other books. The volume presents a fair recapitulation of some of the accepted facts and methods on the subject of hemorrhoids.

**Everyday Terms in Economics.** By Cornelius C. Janzen, Ph.D., Head Department of Economics, State Teachers College, Milwaukee, Wisconsin. Paper. Price, 50 cents. Pp. 75. Chicago: Thiesens Printing Corporation, 1938.

More than 800 terms commonly used in economics and business are defined in what may be looked on as the beginning of a handy dictionary of economics. While some schools of economics would doubtless quarrel with a few of the definitions, the author seems to have steered a middle way which will make his work helpful to members of all schools. The advanced student will be somewhat disappointed to note the omission of some of the newer terms about whose meaning he is most apt to be in doubt.

**Oxygénothérapie et carbothérapie: Bases physiologiques; applications cliniques; techniques.** Par L. Dautrebande, professeur à la Faculté de médecine de l'Université de Liège. Paper. Price, 55 francs. Pp. 300, with 82 illustrations. Paris: Masson & Cie, 1937.

Despite the great interest of the medical profession in inhalation therapy, only a few good monographs on this subject are available. Dautrebande was especially well qualified to write a book on oxygen and carbon dioxide therapy, on the basis of his excellent physiologic background, remarkable knowledge of the literature on the subject, and special interest in the field of group oxygen therapy, to which he was led by his study of war gas poisoning. The first six chapters, presenting the physiology of transport of respiratory gases, the pathophysiologic changes resulting from oxygen want, the effect of carbon dioxide on respiration and circulation, and the physiologic basis for the use of oxygen and carbon dioxide, are excellent. Scant attention, however, is paid to the part played by the breathing mechanism in alveolar ventilation. In the next chapters, VII, VIII, IX and X, a list and a discussion of the clinical conditions in which

oxygen and carbon dioxide therapy has been advocated is presented. These chapters appear to be based more on an extensive knowledge of the medical literature than on personal acquaintance with the practical side of the problem of inhalation therapy (indications, choice of methods and duration of treatment). In the last two chapters, on the technic of administration of oxygen and carbon dioxide, great emphasis is given to masks and catheters, little to oxygen tents and rooms. The army surgeon will find much of interest in reading the chapter on collective oxygen therapy. Clearly written and abundantly illustrated, this book ends with an excellent bibliography (especially English and French). As a whole, this work deserves commendation.

## Miscellany

### THE WORK OF THE COMMISSION ON STANDARDIZATION OF BIO- LOGICAL STAINS

H. J. CONN, Ph.D.

Member of Biological Stain Commission  
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Many physicians are not familiar with the work which has been in progress for over fifteen years under the direction of the Commission on Standardization of Biological Stains; nor perhaps is it generally realized what services this organization is able to perform for doctors. Not all physicians use stains in their work, but even if they do not do so themselves they are quite likely to submit specimens for diagnosis to some laboratory where these products are employed. The Stain Commission proposes to see that the stains obtained by laboratories are dependable. Much of the information given here has been published before<sup>1</sup> but not in sources readily available to the physician.

Not until after the World War, which excluded German dyes from America, did any thought of standardizing biologic stains occur to biologists. Until then it was quite generally accepted throughout the biologic world that for staining purposes the dyes put out by Dr. Grüber of Leipzig were sufficiently standardized, although it has since been learned that these stains were not only lacking in uniformity but sometimes even mislabeled.

The need of standardization was first brought to the attention of American biologists by the exclusion of German dyes during the war and the postwar period of complete embargo on such products, when it was found that the domestic stains were not sufficiently uniform to be reliable. This problem did not become acute in America until the prewar stock of German stains had become exhausted, which did not occur until about 1918-1920. When German stains became available again in the United States it was found that another factor of uncertainty had been introduced, owing to the fact that Dr. Grüber had fathered two concerns, one originally a laboratory manufacturing certain biologic products, the other a company doing no manufacturing but concerned merely with the distribution of stains. It was learned after the war that each of these organizations was selling a complete line of biologic stains and the rival claims of the two added to the confusion of biologists.

To eliminate some of this confusion the Commission on Standardization of Biological Stains was organized by the National Research Council in December 1921. This commission was established as an organization to coordinate the work on stains in which various American scientific organizations were interested. Those at present represented on the Stain Commission are the Society of American Bacteriologists, the American Medical Association, the American Association of

1. Conn, H. J.: Progress in the Standardization of Biological Stains; The Certification of Stains, *Stain Techn.* 9: 81-88, 1934; Recent Advances in the Standardization and Improvement of Biological Stains, *Botanical Review* 3: 72-83, 1937.

Anatomists, the American Association of Pathologists and Bacteriologists, The American Chemical Society, the American Public Health Association, the American Pharmaceutical Association and the American Society of Zoologists. A representative of each of these societies serves on the executive committee of the commission. Other members of the commission are biologists or chemists known to be interested in stains or staining whose names are voted on for membership by the executive committee. Some of these members assist in the testing of stain samples submitted for certification, although by no means the entire membership has ever been called on for this purpose.

The Stain Commission was enabled to get started through the generosity of the Chemical Foundation, from which it has received in all something like \$100,000. At the present time, however, the commission is gradually becoming self supporting, its income deriving from sale of publications and charges made to stain companies whose products are tested. It is hoped to make it completely self supporting within the next few years.

The samples of stains which are tested by the commission, to learn whether or not they deserve certification, are submitted by the stain companies whenever a new batch of any stain has been manufactured. Certification is therefore carried out entirely on a batch basis. No stain company has ever been given a blanket certification for its entire production of any particular dye. This plan of certifying each batch individually was adopted at the beginning of the work because chemical tests were not known which would properly distinguish between satisfactory and unsatisfactory samples. It was realized that the most painstaking and conscientious manufacturer of dyes could not be absolutely certain of duplicating exactly a satisfactory sample of stain.

Today, however, it is often possible to be reasonably certain as to the performance of a stain from certain simple tests. Samples sent to the Stain Commission for certification are submitted to two general types of tests: (1) physicochemical; (2) biologic. An associate, who is located at Washington, D. C., performs the physicochemical tests in a laboratory of the U. S. Department of Agriculture. These tests are both chemical and optical and have been developed little by little in the course of the work as giving the most useful information in the case of each particular dye. The biologic tests are more varied than the chemical tests because comparatively few of the dyes are used by biologists in identical procedures, and this has made it necessary in many cases to test a stain by some method that is used for no other dye. It is considered particularly important, therefore, to determine the performance of each stain in the procedures for which it is ordinarily employed in the biologic laboratory. The methods of testing have been published elsewhere.<sup>2</sup>

Those batches of stains which prove satisfactory by these tests the Stain Commission allows to be sold under its certification. This certification is indicated by a label printed on a special paper which bears the seal of the Stain Commission as a background design. Each label has the signature of the chairman of the commission on its face. Any one buying a stain bearing this certification label of the commission can be sure that the dye is true to type and that the batch from which the sample was obtained has been found satisfactory by biologists for the purposes for which that particular stain is ordinarily employed.

An advantage in employing a certified stain is that the dye content is given on the label whenever methods for determining the dye content of that particular dye are available; also all certification labels bear some general statement as to the purposes for which the stain is intended. The use of a certified stain assures the purchaser that if the stain proves unsatisfactory he can make his complaint to a disinterested body with experi-

ence to tell him whether his trouble arises from faulty technique or from some other source.

Especially important to the user of stains is the fact that unsatisfactory batches do not secure the approval of the commission. When the work was started, a fairly high percentage of samples were rejected as unsatisfactory. This proportion decreased at first but has now remained fairly steady for several years at about 10 per cent of all the samples submitted. The reason for the rejected samples is not because any of the stain companies are unreliable but because of the difficulty of securing absolute uniformity in the manufacture of this type of chemical. As a matter of fact, the stain companies have always been very anxious to put out as reliable products as possible. Those batches that are rejected by the commission are either withdrawn from the market entirely or, as in the case of some stain companies, are sold at a lower price without the commission certification.

This system of certification has worked to very good advantage from the standpoint of the laboratory worker who uses stains to such an extent that it is economical to buy the solid dyes and to make up his own staining solutions. It does not, however, work so well in the case of the physician who may occasionally, for example, have need for 1 or 2 cc. of a blood stain or perhaps of a methylene blue solution. Stain companies report that there is coming to be more and more demand for staining solutions sold in 1 ounce bottles. Presumably these are purchased by individuals who have an occasional need for examining a stained preparation under the microscope but do not do so often enough to purchase dry stains or larger quantities of staining solutions. Whether the purchasers of these ounce bottles are physicians or laboratory workers who employ stains only occasionally is a question to which the answer has not yet been obtained.

The executive committee of the Biological Stain Commission feels that, although it has already accomplished something worth while in making available a supply of reliable stains in solid form, the commission has not accomplished its full purpose if the demand for stains in solution form is increasing and the solutions at present on the market are not entirely reliable. Accordingly, plans are at present under consideration for extending the system of certification in such a way that purchasers of solutions may have a fair degree of confidence as to the quality of the stains they are getting, even though staining solutions cannot be guaranteed to quite the extent that solid dyes can.

There are difficulties, however. Many staining solutions do not keep well, and even if they do their bulk makes it impracticable for a lot to be made up of sufficient size so that approval can be put on a batch basis as in the case of the solid stains. For this reason the plans for the approval of staining solutions are being made slowly and certain information is still necessary before they can be put into practical effect. The information most needed would be obtained if reliable answers were secured to the following three questions:

Which staining solutions as purchased at present give most trouble?

Who are the ultimate consumers of stains purchased in this form (i.e., doctors or laboratory workers)?

What is the most popular size package among purchasers of such solutions?

If answers to these questions are secured and it is found that physicians are the large users of stains as sold in 1 ounce packages, it is hoped that some plan can shortly be adopted for assuring purchasers of the reliability of such solutions on the market and that an announcement concerning this plan can be made at an early date.

Those interested in the subject and having information that may help in answering these questions are invited to communicate with the author of this article.

2. Conn, H. J.: *Biological Stains*, ed. 3, Geneva, N. Y., Biological Stain Commission, 1936, pp. 22-48.



## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Hospitals for Profit: Necrosis Following Hypodermoclysis.**—The plaintiff, a woman of about 60 years of age, underwent a kidney operation in the defendant hospital. Shortly after the operation, a hospital intern and a nurse, at the direction of the operating physician, administered 1,000 cc. of normal saline solution in the plaintiff's pectoral region, just below the breast. There were no undesirable after-effects. Two days later, another hypodermoclysis was administered by the same intern with the assistance of a nurse, this time in the front medial portion of each thigh of the plaintiff. After about 600 cc. of the solution had been administered, the intern ordered the nurse to stop the administration because of the intense pain suffered by the plaintiff. An examination disclosed areas of puffed and discolored tissue about 4 inches in diameter around each of the places where the needles had been inserted. In the course of the next few weeks, the skin and subcutaneous tissues in those areas became necrotic. Following an excision of the necrotic tissue, skin was grafted in the resulting craters, both of which healed. Alleging that the necrosis was the result of the defendant's negligence, the plaintiff instituted a suit for damages. The jury returned a verdict for the defendant, and the plaintiff appealed to the Supreme Court of Minnesota.

There was no direct evidence, the court said, that the fluid introduced into the plaintiff's body was not normal saline solution. The fact that no test of the solution was made was not evidence that it contained a harmful substance, nor was the fact that suffering accompanied its administration evidence of negligence. The medical experts for both sides testified that necrosis is not produced solely by actively destructive substances; it may be produced by any condition obstructing or destroying the circulation of the body fluids through the tissues. Fluids absorbed from the blood by the tissues are carried back into the blood circulation by means of lymphatic vessels. If those vessels are obstructed or if the fluid content of the tissue is so great that they cannot carry it off, or if the circulation of the blood is inadequate, the tissues become water logged and incapable of absorbing from the circulating blood the nourishing fluid necessary to enable them to live and function and since the tissues require the nourishment carried by the blood, they die if they cannot obtain it. Thus an inert solution introduced into a tissue may cause necrosis if its presence impedes or blocks the circulation of the blood through that tissue.

At the time the plaintiff entered the hospital, she was more than 30 pounds overweight. She had undergone a serious operation the previous summer. At the time of her admittance she was not only suffering from a pathologic kidney condition but was also afflicted with edema of the legs and ankles. The record disclosed that sometimes necrosis will follow a hypodermoclysis even though due care is used and no complicating factors are apparent. It was fairly inferable to the court that the necrosis complained of in the present case resulted from the edematous condition of the plaintiff's thighs. Edema indicates that the tissues are overcharged with fluid and that the patient's circulation is not strong enough to correct it. The instillation of still more fluid into those tissues would have the effect of further burdening the tissue and of further curtailing circulation to those regions, with necrosis of those tissues as a result.

Despite the fact that the unfortunate result might by inference be attributed to other causes, the plaintiff insisted that the jury should have been permitted to infer from the fact that injury resulted that it was caused by some solution other than normal saline; and that the jury should have been permitted to infer further, from the "fact" established by this first inference, that the defendant was negligent in administering this harmful solu-

tion. This insistence was in effect, the court pointed out, an assertion that the doctrine of *res ipsa loquitur* applied to the case. But, the court said, that doctrine permits the inference of a fact from an occurrence only when there is no other probable cause of the occurrence. Negligence will not be presumed from the fact that treatment by a physician does not result in a cure. An inference of negligence based on an inferred fact of which there is neither evidence nor predominating probability cannot be safely made. The trial court, in the opinion of the Supreme Court, was correct in limiting the issue to the question whether the defendant was negligent in failing to terminate the hypodermoclysis at an earlier time, and that issue was decided adversely to the plaintiff. The judgment of the trial court for the defendant was therefore affirmed.—*Collings v. Northwestern Hospital (Minn.)*, 277 N. W. 910.

**Malpractice: Failure to Use X-Rays in Extracting Third Molar.**—The plaintiff went to "Dr. Adams Dentists and Associated Dentists" to have fourteen teeth in his lower jaw extracted. A gas anesthetic was administered and a dentist, Sanborn, proceeded to extract the teeth. He experienced difficulty in extracting the third molar on the right side, the forceps slipping off the tooth six or seven times, so far as the patient could determine. The patient sensed a cracking sound when the molar finally came out and he told Sanborn that he believed his jaw was fractured. No examination was then made nor was one made when two days later he renewed his complaint, but he was assured that he would be all right in time. Four days after the extraction he went to a hospital and there it was discovered that his jaw was fractured and that osteomyelitis had developed. He brought an action for malpractice against "Dr. Adams Dentists and Associated Dentists" and Sanborn. From a judgment in favor of the patient the defendants appealed to the Supreme Court of Michigan.

Sanborn testified that the tooth had only partly erupted. He could tell, he testified, from looking at the tooth in what direction the roots were going and he knew in this case that it would take extra effort to extract it. He experienced some difficulty but no more than usual for that type of tooth. In his judgment there was nothing to warrant the use of x-rays and nothing that led him to believe that the jaw was fractured.

The fracture of the jaw in extracting the impacted wisdom tooth, said the Supreme Court of Michigan, did not in and of itself establish negligence. The plaintiff recognized that to establish negligence it would be necessary to show that Sanborn failed to follow the usual and ordinary practice of dentists of average ability practicing in that or similar localities and also that the alleged negligence was the proximate cause of the injuries. He called various experts, who testified as to what might be called approved practice in the vicinity. His allegation of malpractice, however, seemed to rest on the testimony of only one. That witness testified that "A good operator would never proceed when he runs into difficulty, without stopping and taking an x-ray," but his testimony lost probative force through his answers to questions propounded by the plaintiff's own counsel. When he testified, for instance, that perhaps Sanborn would not have done all he did do and used the same instruments and the same method of procedure if he had had the benefit of the use of x-rays, his answer, said the court, was conjectural as to whether or not an x-ray would have dictated a different method than the one employed. Adjudicated malpractice must rest on negligence in commission or omission. When charged on omission, it must be made to appear that the negligence was the proximate cause of the injury. The dental establishment of defendant Adams had an x-ray apparatus available for use by the operator in case of need, but it was not employed in the instance here involved because Sanborn by view and manipulation of the tooth, according to his testimony, was aware of the full situation and knew what forceps would fully meet it. If so, Sanborn extracted the tooth with such knowledge as the x-rays would have afforded. There was no showing that x-rays would have led to a different method of operation and therefore

the charge of malpractice resulting in a fracture of the jaw was based on mere conjecture.

The damages awarded the plaintiff, said the Supreme Court, were awarded both for malpractice in extracting the tooth and for postoperative negligence. The award was in one sum and cannot now be separated so as to distinguish the amount awarded for each charge. The evidence did not warrant the jury in finding the defendants guilty of malpractice in extracting the tooth, and the trial court should have granted a new trial. The judgment in favor of the plaintiff was accordingly reversed and a new trial granted.—*Dunbar v. Adams (Mich.)*, 276 N. W. 895.

**Evidence: Admissibility of Death Certificate.**—The state of Maryland, on behalf of the parents of a child who drowned in a swimming pool owned and operated by the city of Baltimore, brought suit against the mayor and the city council of that city. From a judgment in favor of the plaintiffs, the mayor and the city council appealed to the Court of Appeals of Maryland.

It was contended, among other things, that the lower court had erred in admitting in evidence a transcript of a death certificate, issued by the health department of Baltimore, in which appeared the statement that an autopsy had disclosed drowning as the cause of death. The transcript, said the Court of Appeals, was not authenticated. It was therefore hearsay and irrelevant and should have been excluded. Even assuming that, under Code Pub. Loc. Laws, art. 4, sec. 31, a properly authenticated death certificate would have been admissible, the finding of the coroner as to the cause of death was not. Although the court was of the opinion that the lower court had erred in admitting the transcript, it did not deem the error a reversible one. The judgment in favor of the plaintiffs, however, was reversed on other grounds.—*Mayor and City Council of Baltimore City v. State, for use of Blueford et al. (Md.)*, 195 A. 571.

**Partnerships: Enforceability of Agreement Not to Engage in Practice.**—In September 1934 the plaintiff, a licensed physician, agreed to buy a hospital owned by the defendant physician, and as a part of the same transaction the parties entered into a partnership for general and office practice and obstetrics but not for the practice of surgery. The parties further agreed that on the dissolution of the partnership the defendant would either repurchase the hospital from the plaintiff at the price he paid for it or would refrain for five years from practicing medicine within 100 miles of Pryor, Mayes County, Okla., the town in which the hospital was located and in which the partnership practice had been carried on. The hospital was conveyed to the plaintiff in September 1934 and the plaintiff and defendant began practice as partners, but their entire agreement was not reduced to writing until Jan. 7, 1935. The contract thus evolved, without legal advice, was described by the court as "obviously a layman's agreement" and "not a gem of perfection." In May 1935, by mutual consent, the partnership was dissolved, but the defendant physician refused to repurchase the hospital and continued to practice in the locality. The plaintiff then petitioned the district court, Mayes County, to enjoin him from so practicing, which the court did. The defendant appealed to the Supreme Court of Oklahoma.

Oklahoma statutes (sections 9493 and 9494, O. S. 1931 [15 Okla. St. Ann. sections 218 and 219]) provide that one selling the goodwill of a business may agree with the buyer not to engage in a similar business in a specified county, city, or part thereof, within a reasonable period of time. The defendant, apparently relying on these statutory provisions, contended that, inasmuch as the agreement in the present case contained no provision for the sale to the plaintiff of the goodwill of the defendant's business, such sale was not contemplated by the parties. The Supreme Court, however, held that even though a contract for the sale and transfer of a business omits to mention the goodwill, the presumption is that it was the intention of the parties that the goodwill should pass with the other assets. The defendant further contended that since the sections referred to authorize only agreements not to engage in business

in a specified county or city, or in a part of a county or city, the present agreement was void, because it undertook to prohibit the defendant from engaging in practice within 100 miles of Pryor. The fact, said the Supreme Court, that the contract takes in too much territory does not render it wholly void but void only to the extent that it prevents the defendant from practicing medicine beyond the limits fixed by law, that is in this case the county.

Apparently after the partnership was dissolved and before the plaintiff had instituted this present action, the parties entered into a written stipulation under which it was agreed that the defendant might use the plaintiff's hospital for the treatment of his, the defendant's, patients but that the stipulation was not to be construed as a waiver on the part of either party of his rights under the written agreement of January 1935. The defendant, notwithstanding the terms of this agreement, asserted that, by thus agreeing to accept benefits from the defendant's practice, the plaintiff was barred from contending that the defendant's practice was in violation of the agreement into which they had entered in the first instance. With this contention, the Supreme Court did not agree. Consent by the plaintiff to the use of his hospital for professional purposes amounted to nothing more than commendable professional courtesy, and there was no evidence that the defendant had been misled or injured by the arrangement such as would be necessary to bar the plaintiff's contention.

For the reasons stated the injunction restraining the defendant from practicing was affirmed but only so far as related to Mayes County.—*Herrington v. Hackler (Okla.)*, 74 P. (2d) 388.

## Society Proceedings

### COMING MEETINGS

- Academy of Physical Medicine, Washington, D. C., Oct. 24-26. Dr. Herman A. Osgood, 144 Commonwealth Ave., Boston, Secretary.
- American Academy of Ophthalmology and Oto-Laryngology, Washington, D. C., Oct. 9-14. Dr. William P. Wherry, 107 South 17th St., Omaha, Executive Secretary.
- American College of Surgeons, New York, Oct. 17-21. Dr. George W. Crile, 40 East Erie Street, Chicago, Chairman, Board of Regents.
- American Hospital Association, Dallas, Texas, Sept. 26-30. Dr. Bert W. Caldwell, 18 East Division St., Chicago, Executive Secretary.
- American Public Health Association, Kansas City, Mo., Oct. 25-28. Dr. Reginald M. Atwater, 50 West 50th St., New York, Executive Secretary.
- American Society of Tropical Medicine, Oklahoma City, Nov. 15-18. Dr. E. Harold Hinman, Wilson Dam, Ala., Secretary.
- Associated Anesthetists of the United States and Canada, New York, Oct. 17-21. Dr. F. H. McMechan, 318 Hotel Westlake, Rocky River, Ohio, Secretary General.
- Association of American Medical Colleges, Syracuse, N. Y., Oct. 24-26. Dr. Fred C. Zappfe, 5 South Wabash Ave., Chicago, Secretary.
- Association of Military Surgeons of the United States, Rochester, Minn., Oct. 13-15. Dr. H. L. Gilchrist, Army Medical Museum, Washington, D. C., Secretary.
- Central Association of Obstetricians and Gynecologists, Minneapolis, Oct. 6-8. Dr. William F. Mengert, University Hospitals, Iowa City, Secretary.
- Central Society for Clinical Research, Chicago, Nov. 4-5. Dr. Lawrence D. Thompson, 4932 Maryland Ave., St. Louis, Secretary.
- Clinical Orthopedic Society, Nashville, Tenn., and Birmingham, Ala., Oct. 7-8. Dr. H. Earle Conwell, 215 Medical Arts Bldg., Birmingham, Ala., Secretary.
- Delaware Medical Society of, Dover, Oct. 10-12. Dr. Allan V. Gilliland, Smyrna, Secretary.
- Indiana State Medical Association, Indianapolis, Oct. 4-6. Mr. Thomas A. Hendricks, 23 East Ohio St., Indianapolis, Executive Secretary.
- Inter-State Postgraduate Medical Association of North America, Philadelphia, Oct. 31-Nov. 4. Dr. W. B. Peck, 27 East Stephenson St., Freeport, Ill., Managing Director.
- Kentucky State Medical Association, Louisville, Oct. 3-6. Dr. Arthur T. McCormack, 620 South Third St., Louisville, Secretary.
- Mississippi Valley Medical Society, Hannibal, Mo., Sept. 28-30. Dr. Harold Swanberg, 510 Main St., Quincy, Ill., Secretary.
- Omaha Mid-West Clinical Society, Omaha, Oct. 24-28. Dr. J. D. McCarthy, 107 South 17th St., Omaha, Secretary.
- Pacific Association of Railway Surgeons, Los Angeles, Oct. 7-8. Dr. W. T. Cummins, Southern Pacific General Hospital, San Francisco.
- Pennsylvania Medical Society of the State of, Scranton, Oct. 3-6. Dr. Walter F. Donaldson, 500 Penn Ave., Pittsburgh, Secretary.
- Southern Medical Association, Oklahoma City, Nov. 15-18. Mr. C. P. Loran, Empire Bldg., Birmingham, Ala., Secretary.
- Southwestern Medical Association, El Paso, Texas, Nov. 3-5. Dr. Orville E. Egbert, 116 Mills St., El Paso, Texas, Secretary.
- Vermont State Medical Society, Burlington, Oct. 6-7. Dr. B. F. Cook, 154 Bellevue Ave., Rutland, Secretary.
- Virginia Medical Society of, Danville, Oct. 4-6. Miss Agnes V. Edwards, 1200 East Clay St., Richmond, Secretary.

## Current Medical Literature

### AMERICAN

The Association Library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1928 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

#### American Heart Journal, St. Louis

16: 133-260 (Aug.) 1938

- Roentgenologic and Electrocardiographic Diagnosis of Coronary Disease: Comparative Study of 140 Cases. G. Levene, R. M. Lowman and E. G. Wissing, Boston.—p. 133.
- Influence of Certain Glucosides of Digitalis Lanata on the Coronary Blood Flow and Blood Pressure in the Trained Dog. H. E. Essex, J. F. Herrick, Rochester, Minn., and M. B. Visscher, Minneapolis.—p. 143.
- Action of Digitalis on the Isolated Heart. L. N. Katz, M. Mendlowitz and H. A. Kaplan, with assistance of K. Jochim and E. Lindner, Chicago.—p. 149.
- Gradual Occlusion of a Coronary Artery: Experimental Study. L. Blum, G. Schauer and B. Caley, New York.—p. 159.
- Electrocardiograms in Which the Main Initial Ventricular Deflections Are Directed Downward in the Standard Leads. J. Burstein and L. Ellenbogen, New York.—p. 165.
- \*Erythralgia (Erythromelalgia) of Extremities: Syndrome Characterized by Redness, Heat and Pain. L. A. Smith and E. V. Allen, Rochester, Minn.—p. 175.
- Studies of the Circulation in Pericardial Effusion. H. J. Stewart, N. F. Crane and J. E. Deitrick, New York.—p. 189.
- Absorption from the Pericardial Cavity in Man. H. J. Stewart, N. F. Crane and J. E. Deitrick, New York.—p. 198.
- Aneurysm of the Heart: Clinical Recognition of Aneurysm of Left Ventricle. D. Ball, New York.—p. 203.
- \*Electrocardiographic Findings in Forty-Four Cases of Trichinosis. C. H. Beecher and E. L. Amidon, Burlington, Vt.—p. 219.
- Cardiac Syncope Due to Paroxysms of Ventricular Flutter, Fibrillation and Asystole in a Patient with Varying Degrees of Auriculoventricular Block and Intraventricular Block: Report of Case. G. Gertz, H. A. Kaplan, L. Kaplan and W. Weinstein, Chicago, Ill.—p. 225.

**Erythralgia of the Extremities.**—Smith and Allen believe that erythralgia is a more descriptive term than erythromelalgia for the syndrome of heat, redness and pain of an extremity. This syndrome, which may affect one or more extremities, is characterized by discoloration and distress, both of which are dependent entirely on the temperature of the skin, the increase of which constitutes the third component. The condition may occur as a primary disturbance or it may be secondary to such conditions as polycythemia vera. The diagnosis depends on the establishment of a close relationship between the occurrence of the distress and the temperature of the skin. When the temperature of the skin increases above a critical point, the distress occurs; when it decreases below the critical point, the distress disappears. The distress itself results from a susceptible state of the skin to increased temperatures, a condition which does not occur in normal persons. Treatment is not uniformly successful. It is important to determine whether there is any condition such as polycythemia to which erythralgia might be secondary. Under such a circumstance the treatment of the syndrome affecting the extremities would be the treatment of the condition which produces it. Surprisingly, acetylsalicylic acid in amounts of 10 grains (0.65 Gm.) may produce marked relief which persists for as long as several days. No adequate explanation of this is available. Some symptomatic relief may be obtained by avoiding procedures that produce vasodilatation in the extremities. Avoidance of exposure of the feet to warmth, as in riding in the front seat of an automobile, may alleviate some of the distress, as may also the use of light socks or stockings and of sandals or perforated shoes. When simple measures fail, it may be necessary to anesthetize the skin of the feet by section, crushing or by the injection of alcohol into such peripheral nerves as the posterior tibial, peroneal and sural. A logical method is to attempt to desensitize the skin to heat.

**Electrocardiograms in Trichinosis.**—Beecher and Amidon present the electrocardiographic observations of forty-four patients with trichinosis in the second and ninth weeks of their illness. All these patients were previously apparently healthy persons from 17 to 20 years of age. They had recently passed physical examinations, at which time no evidence of cardiac disease had been found. In none of the tracings were there definite changes in the T wave in lead 2, nor were the amplitudes of the QRS waves abnormally low. In case 4 the first electrocardiogram showed frequent premature contractions of the nodal type. There was no history of cardiac irregularity before this illness, and on the patient's discharge from the hospital the pulse was again regular, as indicated by the second electrocardiogram that was taken. In case 36 the PR interval was found to be above the normal limits in the first tracing, but it had returned to normal limits on the second examination. In this case splintering was noted on the first tracing in leads 2 and 3 and was not found when the second examination was made.

#### American J. Digestive Diseases, Huntington, Ind.

5: 345-404 (Aug.) 1938

- Studies in Absorption of Undigested Protein in Human Beings: VII. Absorption of Protein Introduced by Tube into the Duodenum. I. Gray and M. Walzer, Brooklyn.—p. 345.
- \*Bile Salt Therapy in Gallbladder Disease. H. Doubilet, H. Yarnes and A. Winkelstein, New York.—p. 348.
- Symptomatology of Gastritis. J. B. Carey, Minneapolis.—p. 353.
- Esophageal Varices in Portal Hypertension: Pathogenesis and Diagnosis by Roentgenography. M. Plotz and N. E. Reich, Brooklyn.—p. 357.
- The Gastro Pump. S. A. Seley, Brooklyn.—p. 360.
- Clinical Course of Chronic Ulcerative Colitis, Based on 7,662 Proctoscopy Examinations. M. H. Streicher, Chicago.—p. 361.
- Factors Which Reduce Gastric Acidity: Survey of the Problem. F. Hollander, New York.—p. 364.
- The Gastric Secretory Curve Before and After the Mann-Williamson Operation and Its Bearing on the Normal Regulation of Gastric Acidity. C. M. Wilhelmj and R. W. Finegan, Omaha.—p. 373.
- Review of Recent Practices in the Field of Gastro-Enterology at the University of Minnesota Hospitals. C. E. Rea, Minneapolis.—p. 377.
- Management of a Permanent Colostomy. L. J. Drucker, New York.—p. 382.
- Notes on a Trip to the Scandinavian Countries and London. M. W. Comfort, Rochester, Minn.—p. 386.

**Bile Salt Therapy in Gallbladder Disease.**—Doubilet and his associates report thirty-eight cases of pain and dyspepsia after cholecystectomy, in the majority of which relief was obtained by a fat free diet and by an adequate intake of bile salts. Certain exceptions must be observed. If a choledochal stone is present, the increased flow of bile following the administration of bile salt results in an accentuation of symptoms or even the appearance of jaundice. Any condition, such as partial stricture, malignant growths or chronic pancreatitis, which would diminish the diameter of the common bile duct could cause an increase in symptoms after treatment with bile salt. The presence of gastric hyperacidity renders treatment difficult. In such cases the frequent attacks of pain seem to be due to the recurrent spasm of the sphincter of Oddi. The addition of atropine and alkalis to the therapy is of great assistance. The neurotic patient is also difficult to treat, since any emotional upset brings on an attack of pain. This is apparently due to a spastic condition of the gastrointestinal tract which involves, among other sphincters, the common duct sphincter as well. It would seem that the increased flow of bile from the liver, the disappearance of the difficulty in digestion and the improvement in intestinal peristaltic action all tend to eliminate the tendency to gastrointestinal spasm. In support of this it has often been noted that the relief of constipation only by the ordinary saline cathartics is occasionally of some assistance in the improvement of painful symptoms. The removal of a functioning gallbladder containing a few stones should be deprecated on general physiologic principles. Medical therapy should be attempted before operation is advised. However, the treatment of patients suffering from disease of the gallbladder cannot be condensed to a few directions; but, if one keeps constantly in mind the known physiologic principles of the biliary and gastrointestinal tracts, one can achieve considerable success in the therapy of disease of the gallbladder.

## American Journal of Psychiatry, New York

95: 1-254 (July) 1938

- The Mind of the Citizen. Tweedsmuir.—p. 19.  
Responsibility of the Community for Crime. P. N. Schaeffer, Reading, Pa.—p. 23.  
Experimental Study of Concept Formation in Schizophrenia: I. Quantitative Analysis of Results. J. Kasanin and Eugenia Hanfmann, Chicago.—p. 35.  
Study of Auditory Apparatus in Patients Experiencing Auditory Hallucinations. E. V. Semrad, Boston.—p. 53.  
Relation Between Precipitating Situation and Outcome in Manic-Depressive Psychosis. R. C. Hunt, Rochester, N. Y.—p. 65.  
Symptoms and Treatment of Barbiturate Intoxication and Psychosis. F. J. Curran, New York.—p. 73.  
Loss of Temporal Localization as Manifestation of Disturbed Self Awareness. L. H. Cohen and G. N. Rochlin, Worcester, Mass.—p. 87.  
Eighteen Hundred and Seventeen Cases of Suicidal Attempt: Preliminary Statistical Survey. P. Piker, Cincinnati.—p. 97.  
Perential Relationship Between Blood Sugar and Spinal Fluid Sugar in Mental Disease. E. P. Johns and G. H. Stevenson, London, Ont.—p. 117.  
Clinical Note on a Self Felloator. E. Kahn and E. G. Lion, New Haven, Conn.—p. 131.  
The Psychiatrist's Roles with His Patients. G. S. Sprague, White Plains, N. Y.—p. 135.  
Clinical Studies of Instinctive Reactions in Newborn Babies. Margarette A. Ribble, New York.—p. 149.  
\*Evaluation of Hydrotherapy in Treatment of Delirium Tremens. R. M. Bell, Taunton, Mass., and P. C. Talkington, Philadelphia.—p. 161.  
Comparative Study of Negro and White Admissions to the Psychiatric Pavilion of the Cincinnati General Hospital. P. S. Wagner, Towson, Md.—p. 167.  
The Morbidity Incidence of Degenerative Somatic Diseases in Psychotics in Comparison with the Same Type of Disease in Comparable Age Groups in Civil Life. F. S. Caprio, Marion, Ind.—p. 185.  
Mental Changes in Chorea Minor. D. Shaskan, New York.—p. 193.  
Results of Nonspecific Treatment in Dementia Praecox. C. O. Cheney and P. H. Drewry Jr., White Plains, N. Y.—p. 203.

**Hydrotherapy in Delirium Tremens.**—Bell and Talkington treated 112 consecutive patients admitted with a diagnosis of delirium tremens by hydrotherapy. The treatment consisted of (1) complete withdrawal of alcohol, (2) saline cathartics, (3) cold wet sheet packs during the period of active hallucinosis and excitement, (4) neutral continuous baths from 93 to 96 F., (5) electric light bath for the promotion of elimination, (6) fan douche and needle spray for their tonic effects, (7) high caloric diet and (8) occupational therapy. Under this regimen hallucinosis persisted between one and six days or an average of 3.2 days. Three patients, because of severe complications, remained for treatment for a period of several months, bringing the average period of hospital residence to 27.3 days. Five patients died. One death occurred in each decade between 20 and 70 years. Each of these presented a more serious type of complication on admission. Since the results compare so favorably with other series reported it is felt that hydrotherapy is an excellent means of treating delirium tremens.

## American Journal of Tropical Medicine, Baltimore

18: 331-436 (July) 1938

- \*Duration of Plasmodium Knowlesi Infections in Man. D. F. Milam and L. T. Coggeshall, New York.—p. 331.  
\*Two Years' Observations on the Use of Atabrine as Prophylactic Agent in Malaria. R. A. Hill and M. H. Goodwin Jr., Thomasville, Ga.—p. 339.  
Infection of Reticulocytes by Plasmodium Vivax. S. F. Kitchen, Tallahassee, Fla.—p. 347.  
Erythrocyte Susceptibility to Plasmodium Vivax, Grassi and Feletti, 1890. H. E. Hingst, Brunswick, Ga.—p. 361.  
Mango Dermatitis. J. L. Kirby-Smith, Jacksonville, Fla.—p. 373.  
New Method for Stripping Venomous Snakes. C. M. Johnson, Panama, Republic of Panama.—p. 385.  
Multiplication of the Virus of Equine Encephalomyelitis in Surviving Mosquito Tissues. W. Trager, Princeton, N. J.—p. 387.  
Studies on Experimental Coeliomyia Americana Infestations, with Special Reference to the Bacterial Flora and the Development of Immunity. Floreine A. Borgstrom, Houston, Texas.—p. 395.  
Progress of Spirochete Infection in the Developmental Stages of the Host Tick, Ornithodoros Hermsi, Wheeler. C. M. Wheeler, San Francisco, Calif.—p. 413.  
Antigenic Similarity of a Fungus Cadophora Americana Isolated from Wood Pulp to Phialophora Verrucosa Isolated from Patients with Dermatitis Verrucosa (Chromoblastomycosis). D. S. Martin, Durham, N. C.—p. 421.  
Studies on Oxyuriasis: X. Artefacts in "Cellophane" Simulating Pinworm Ova. Lucy Reardon, Washington, D. C.—p. 427.

**Plasmodium Knowlesi Infections in Man.**—Milam and Coggeshall inoculated thirty white and twelve Negro patients having dementia paralytica with Plasmodium knowlesi malaria for therapeutic purposes. In the thirty white patients, parasites

were first seen in blood smears as early as the third day and as late as the eighteenth day after inoculation and persisted for from three to fourteen days. Blood first proved to be non-infectious for rhesus monkeys as early as eighteen days and as late as 131 days after the original inoculation. After their blood was no longer infectious for monkeys, eighteen patients were reinoculated on twenty-three occasions, with time intervals of from thirty to 491 days after the original inoculation, and all were found to be immune. Negro patients were less susceptible to Plasmodium knowlesi infections than white patients; the incubation period was longer (from seven to twenty-seven days) and the duration of microscopically visible parasites ranged from two to eleven days. Their blood was infectious for monkeys as late as the thirty-sixth day and noninfectious as early as the twenty-eighth day after inoculation. Seven patients whose blood was noninfectious for monkeys were reinoculated at intervals of from twenty-eight to 107 days after the initial inoculation, and all were immune.

**Atabrine as Prophylactic in Malaria.**—Hill and Goodwin observed 1,646 persons for two years in order to determine whether or not a suitable method of drug prophylaxis was available for use in a highly malarious section of Georgia and Florida. In the area in which these studies were conducted, mosquito control measures were objectionable (the 16,000 acres was devoted to increasing and preserving wild game life for sport) and in many cases impossible, owing to the topography. Initial blood smears indicated a blood parasite index of 16.9 per cent. This has been reduced to 0.3 per cent over a period of two years. Atabrine proved to be the most successful prophylactic agent, although quinine seemed to exert a helpful influence in reducing the incidence of malaria. No toxic reactions to atabrine were observed. After the administration of both atabrine and plasmochin, the number of malarial carriers and cases exhibiting both gametocytes and schizonts was materially reduced. Because of the natural variations of malarial intensities caused by fluctuations in climatic conditions, these prophylactic experiments should always be continued over a period of several years to furnish the maximal amount of reliable information.

## American Review of Tuberculosis, New York

38: 143-275 (Aug.) 1938

- Reinduced Pneumothorax: Case of Bilateral Alternating and Simultaneous Collapse Reestablished Five Times. J. N. Hayes, Saranac Lake, N. Y., and L. Brown.—p. 143.  
Results of Collapse Therapy in Pulmonary Tuberculosis. F. R. Harper, Denver.—p. 151.  
Isolated Form of Pulmonary Tuberculosis: Experimental Production in Rabbits. C. L. Hsu, Peiping, China.—p. 162.  
Pathogenesis of Tuberculous Cavities. P. M. Andrus, London, Ont.—p. 174.  
Early Primary Pulmonary Tuberculosis. W. E. Carroll, Meriden, Conn.—p. 190.  
\*The Environmental Factor in Relation to High Negro Tuberculosis Rates. R. B. Roth.—p. 197.  
Attenuation by X-Rays of the Virulence of Human Tubercle Bacilli. W. F. Drea, Colorado Springs, Colo.—p. 205.  
Bromsulphalein Test and Blood Cholesterol in Pulmonary Tuberculosis. S. A. Levinson and H. A. Siegal, Chicago.—p. 229.  
Levinson Test in Tuberculous Meningitis. M. Gleich, New York.—p. 239.  
Quantitative Method for Estimating Number of Tubercle Bacilli in Sputum. Elizabeth F. Jordan, New York.—p. 241.  
Chronic Nickel Poisoning and Productive Miliary Tuberculosis: Report of Case. R. Pomeranz, Newark, N. J.—p. 252.  
Cystic Disease of Lungs. J. L. Dubrow and W. R. Wynne, Des Moines, Iowa.—p. 262.  
Pulmonary Gangrene Complicating Pulmonary Tuberculosis: Case Report. E. K. Geer, St. Paul, Minn.—p. 266.  
Mantoux Tests with the Gottschall-Bunney Diluent for Tuberculin: Report of 1,648 Tests. Emilie Clarke, Detroit.—p. 270.

**Environment and Tuberculosis in the Negro.**—In order to overcome the differences of environment of the Negro as related to tuberculosis, Roth studied the figures from the United States Army and he believes that they equalize the environmental factor. They are made up of the absolute numbers and the rates for tuberculosis morbidity and mortality among enlisted men in the continental United States alone. For the period (1922 to 1936) under consideration the total white death rate is 0.24 per thousand enlisted men, while the Negro rate is 0.99. When this evidence is considered in conjunction with other environmental surveys and in view of the clinical and

pathologic differences which are to be recognized in the two races, environment cannot be held to explain the differences in susceptibility to the disease which the two races so generally manifest. The fact that tuberculosis, as it is handled by the army, accords so closely to the standard set in the Framingham experiment makes it possible for the author to generalize on the role which environment does play in tuberculosis in civil life. Diagnosis in the army is highly developed. The average death rate from tuberculosis in all troops combined for the fifteen years was 0.28 per thousand. According to the figures of the National Tuberculosis Association, the national death rate in 1927 for males in the age group corresponding roughly to that represented in the army (20 to 49 years) was 1.17 per thousand. A great deal of this difference is undoubtedly due to the fact that in the army a selected group of men is dealt with; but certainly environment can be held to be responsible for a considerable part of it. Even under optimal environmental conditions there would be the same difference in rates. A slightly greater percentage of Negroes might be expected to contract the disease, but a considerably greater percentage of them would die from it.

### Annals of Medical History, New York

10: 279-368 (July) 1938

- Survey of Social Implications of the History of Medicine in Great Britain, 1742-1867. W. White, Los Angeles.—p. 279.  
James Kilpatrick and Smallpox Inoculation in Charleston. J. I. Waring, Charleston, S. C.—p. 301.  
Medicine in the Modern Drama. G. W. Corner 4th, Rochester, N. Y.—p. 309.  
Character of El Hakim in "The Talisman." G. K. Tallmadge, Milwaukee.—p. 318.  
History of Geriatrics. J. T. Freeman, Philadelphia.—p. 324.  
Southern California Medicine: Part II. J. W. Shuman, Los Angeles.—p. 336.

### Archives of Physical Therapy, Chicago

19: 449-528 (Aug.) 1938

- Evaluation of Fever Therapy After Six Years' Experience. W. H. Schmidt, Philadelphia.—p. 457.  
Fever Therapy in Gonococcal Infections. W. J. Egan and R. G. Plaskoski, Milwaukee.—p. 463.  
Fever Therapy Survey at Cleveland Clinic. W. J. Zeiter, Cleveland.—p. 469.  
Physical Methods of Fever Production from a Physiologic Point of View. K. Phillips, Miami, Fla.—p. 473.  
Advances in the Prophylaxis and Treatment of Foot Disabilities. J. Weiss and H. J. Behrend, New York.—p. 484.  
Status of Ionization in Nasal Allergy. F. K. Hansel, St. Louis.—p. 489.  
Clinical Applications of Chronaxia. A. F. Liber, New York.—p. 499.

### Archives of Surgery, Chicago

37: 175-352 (Aug.) 1938

- Spondylolisthesis: Treatment by Anterior Bone Graft. K. Speed, Chicago.—p. 175.  
\*Carcinoma of the Breast: Review of 439 Cases. W. F. Shepherd, Sayre, Pa.—p. 190.  
Problems in Surgical Treatment of Renal Calculi. T. E. Gibson, San Francisco.—p. 211.  
Complete Excision of Cervical Glands for Regional Metastases. L. C. Cohn, Baltimore.—p. 240.  
Pseudo-Ulcers of Duodenum of the Normal Dog, Including a Study of Incidence of Intestinal Ulcers in the Normal Dog. I. F. Volini, H. L. Widenhorn and H. De Feo, Chicago.—p. 259.  
Perianal Cysts of Vestigial Origin. J. A. Gius and A. P. Stout, New York.—p. 268.  
Motion of Lung After Surgically Induced Paralysis of Phrenic Nerve. A. L. Banyai, Wauwatosa, Wis.—p. 288.  
Experimental Pyloric and Jejunal Obstructions: Absorption of Sodium Chloride from Stomach and Upper Part of Small Intestine. T. G. Orr and M. J. Rumold, Kansas City, Kan.—p. 295.  
\*Leukocyte Exhaustion Following Surgical Procedures. J. Van Duyn 2d, Syracuse, N. Y.—p. 302.  
Experimental Administration of Duodenal Contents to Dogs with Acute High Intestinal Obstruction. F. C. Hill and H. V. O'Connell, Omaha.—p. 311.  
Lingual Thyroid. B. S. Ray, New York.—p. 316.  
Right Paraoduodenal Hernia: Case Favoring Theory of Treitz. C. Baumeister and M. Hanchett, Council Bluffs, Iowa.—p. 327.  
Sixty-Sixth Report of Progress in Orthopedic Surgery. J. G. Kuhns, S. M. Roberts, R. J. Joplin, W. A. Elliston, F. W. Ilfeld, Boston; J. A. Freiberg, Cincinnati; J. E. Milgram, New York, and R. Stirling, Edinburgh, Scotland.—p. 333.

**Carcinoma of Breast.**—Shepherd concludes that chronic mastitis, stagnation, previous involutional or inflammatory changes and trauma are believed by many to be important predisposing conditions in carcinoma of the breast. Malignant tumor of the breast is especially prevalent in the fourth and

fifth decades of life; it is seldom found in persons less than 20 years of age, and about 1 per cent occur in men. Cystic disease is not believed to be a precancerous lesion. All single solid tumors of the breast should be removed for diagnosis. While the diagnosis of carcinoma can in the majority of cases be made from the gross tissue at the operating table, a competent pathologist with facilities for examining frozen sections should be available for the 10 or 20 per cent of cases in which this is not possible. Mammary cancer is found more often in married women than in unmarried women. Cancer of the breast seems to appear slightly earlier in those patients who are unable to meet the physiologic demands of pregnancy and latest in those who have never been pregnant. Cancer can be cured, but early diagnosis and appropriate treatment are absolutely necessary. Cases in which the lymph glands are involved decidedly outnumber those in which there is no such involvement. In the former group the mortality at the end of ten years is about four times that in the latter group. Definite metastases in the supraclavicular region are a contraindication to surgical treatment, as is also large extension to the axilla, because life is endangered and surgery in the minds of the public may be discredited. Continued education of the public is one of the best weapons in the fight against malignant tumors. Radical operation for cancer of the breast permits a number of different incisions but is commonly understood to demand the removal in one piece of the breast with all its skin, the pectoralis major and pectoralis minor muscles, the axillary contents (with the exception of the vein, the artery and the brachial plexus) and the deep fascia from the clavicle to the epigastrium and from the sternum to the latissimus. During the last decade patients have been coming to operation a few weeks earlier on the average than those of the previous ten years.

### Leukocyte Exhaustion Following Surgical Procedures.

—Van Duyn has recently observed that, in association with a progressively downhill course after operation, examination of the blood frequently shows leukopenia, with a normal differential count and a marked shift to the left of the neutrophils. This picture signifies a wearing out of the leukopoietic power and offers an explanation of the patient's lack of response to therapeutic measures. He presents seven cases in which leukocyte exhaustion occurred. In all there was the characteristic leukopenia, with a marked shift to the left of the neutrophils. In four cases the degree of sepsis did not appear sufficient to have exhausted a normal leukopoietic power. It may be assumed, therefore, that in these cases the leukocyte reserve was at an abnormally low level before operation. The term "low leukocyte reserve" is used to designate this condition and to differentiate it from Doan's "low marrow reserve," in which agranulocytosis rather than leukocyte exhaustion develops. Leukocyte exhaustion occurs not only in cases of severe or prolonged sepsis but in cases of much milder strain and even in cases in which there is no strain at all. It should be considered as a possible complication of any surgical strain and its presence should be discovered early. This means that (1) leukocyte counts should be made at the time of admission and especially before operation for the detection of any immediate abnormality and for possible future comparisons, (2) counts should be made frequently when severe sepsis is present, in order to detect leukocyte exhaustion at an early stage, and (3) they should be made whenever a patient's condition becomes worse, especially postoperatively and in the presence of abdominal distention, even in the absence of demonstrable infection. The percentages of nonfilamented neutrophils should be determined at every count. The treatment of leukocyte exhaustion should probably be the same whether a severe or a mild strain is required to bring it about. In the cases reported, administration of liver extract, both orally and intramuscularly, and blood transfusions appeared to be of great value if administered early enough in the course of the leukopoietic breakdown.

### Bulletin New York Academy of Medicine, New York

14: 453-520 (Aug.) 1938

- The Treatment of Hemolytic Streptococcus Infections and the Newer Applications of Sulfanilamide. R. Ottenberg, New York.—p. 453.  
Modern Treatment of Diabetes. J. R. Scott, New York.—p. 480.  
Hieronymus Muenzer and Other Fifteenth Century Bibliophiles. E. P. Goldschmidt, London, England.—p. 491.



**Delaware State Medical Journal, Wilmington**

10: 147-166 (July) 1938

- Tumors of the Mouth and Jaws. R. H. Ivy, Philadelphia.—p. 147.  
Malocclusion. G. M. Anderson, Baltimore.—p. 152.  
Medicodental Relationships. B. L. Brun, Baltimore.—p. 156.  
Interrelations of Dentistry and Internal Medicine. S. R. Miller, Baltimore.—p. 159.

**Journal of Biological Chemistry, Baltimore**

124: 359-572 (July) 1938. Partial Index

- Steps in Concentration of Vitamin B<sub>6</sub>. Gladys A. Emerson, A. Mohammad, O. H. Emerson and H. M. Evans, Berkeley, Calif.—p. 377.  
Lipemia in Rabbits Infected with *Streptococcus Viridans*. E. M. Boyd, J. H. Orr and G. B. Reed, Kingston, Ont.—p. 409.  
A Second Crystallizable Liver Protein. A. L. Dounce and J. B. Sumner, Ithaca, N. Y.—p. 415.  
\*Is Cobalt of any Significance in Treatment of Milk Anemia with Iron and Copper? E. J. Underwood and C. A. Elvehjem, Madison, Wis.—p. 419.  
Isolation of Components of Streptococcal Nucleoproteins in Serologically Active Form. M. G. Sevag, D. B. Lackman and J. Smolens, Philadelphia.—p. 425.  
Chemical Studies of Suprarenal Cortex: IV. Structures of Compounds C, D, E, F and G. H. L. Mason, W. M. Hoehn and E. C. Kendall, Rochester, Minn.—p. 459.  
Id.: V. Conversion of Compound E to Series Which Contains Four Atoms of Oxygen and to Adrenosterone by Action of Calcium Hydroxide. H. L. Mason, Rochester, Minn.—p. 475.  
Chemical Topography of Brain. L. O. Randall, Worcester, Mass.—p. 481.  
Effect of Pregnancy and Lactation on Cholesterol and Fatty Acids in Rat Tissues. Ruth Okey, Lois Stewart Godfrey and Frances Gilman, Berkeley, Calif.—p. 489.  
Evidence of Physiologic Specificity of Methionine in Regard to Methylthiol Group: Synthesis of S-Ethylhomocysteine (Ethionine) and Study of Its Availability for Growth. Helen M. Dyer, Washington, D. C.—p. 519.  
Urinary Cholesterol in Cancer. Edith Bloch and H. Sohotka, New York.—p. 567.

**Cobalt in Treatment of Milk Anemia.**—Underwood and Elvehjem rendered fourteen rats anemic on whole cow's milk in the usual manner. At weaning they were divided into three groups for treatment; six were given milk ad libitum plus a daily supplement of 0.05 mg. of copper and 0.02 mg. of manganese together with 0.5 mg. of iron in the form of cobalt-free ferric chloride, three received the same treatment except that the iron salt was unpurified, and five rats also received the same treatment but in addition were given 0.1 mg. of cobalt a day in the form of cobalt chloride. The animals received the treatments for a period of three months, during which time frequent weightings and hemoglobin determinations were made. Cobalt determinations were carried out on the whole bodies of rats at birth and at weaning, on the livers of several of the experimental animals and on occasional samples of the milk as fed. It is concluded that iron, copper and manganese are the only minerals which must be added to milk for the normal growth and well being of the rat and that the small amounts of cobalt which contaminate almost all iron salts play no significant part in the treatment of milk anemia in the animal. The possible cobalt requirement appears to be less than 0.6 microgram daily.

**Journal-Lancet, Minneapolis**

58: 341-384 (Aug.) 1938

- Physiology of Hypertension. H. M. Sweeney, Vermillion, S. D.—p. 375.  
Value of the Individual Health Record in Hygiene Teaching. H. D. Lees and Emilie M. Burke, Philadelphia.—p. 378.

**Journal of Nervous and Mental Disease, New York**

88: 141-272 (Aug.) 1938

- Psychotherapy and Psychiatry: Report of Two Cases. H. Flournoy, Geneva, Switzerland.—p. 141.  
Studies in Equilibrium Reaction. S. Weisz, Iowa City.—p. 150.  
\*Study of Fifty Cases of Bromide Psychosis. F. J. Curran, New York.—p. 163.  
Cerebellar Coma. A. Gordon, Philadelphia.—p. 193.  
Clinical Syndromes of Echolalia, Echopraxia, Grasping and Sucking: Their Significance in Disorganization of Personality. D. E. Schneider, New York.—p. 200.

**Bromide Psychosis.**—Curran discusses the histories of fifty (thirty-five women and fifteen men) patients with bromide psychosis admitted to the Bellevue Psychiatric Hospital. Although the presence of a bromide rash is stressed by many writers, such a rash was found in only nine of these patients. Pupillary changes were noted in practically all these cases, the most common observation being widely dilated pupils which

reacted sluggishly to light. Blurring of vision and diplopia occurred infrequently, although Craven lists these as typical changes. Weakness of convergence was found in a few cases. Only one patient complained of tinnitus. Seven patients had nystagmus; five were chronic alcoholic addicts, a sixth had a recent head injury with a period of unconsciousness and the seventh had a recent mastoidectomy with a purulent discharge from the left ear. It would appear probable, therefore, that nystagmus is not produced by the bromides but by other factors. Disturbances of speech were noted in practically all the patients; the speech is usually thick and indistinct. Tremors of the tongue, lips and fingers were present in all cases. A fever between 100 and 103 F. was present in most cases of delirium. Infections of the upper part of the respiratory tract were found in many patients. Tachycardia is present in most cases, the average pulse rate being from 120 to 140. Other frequent signs were fetid breath, coated tongue, conjunctivitis, impaired digestion, constipation, emaciation and vasomotor changes. Impotence in men and menstrual disturbances in women were occasionally found. There was one fatality, a patient dying with pulmonary edema within ten hours of admission to the hospital. The average duration of using bromides was several months. In thirty cases in which the blood was examined, from 55 to 500 mg. of sodium bromide per hundred cubic centimeters of serum was found. The average duration of hospital stay was approximately eighteen days. Thirty-three patients were discharged to the custody of relatives (of these, twenty-six had recovered from their psychosis and five others showed marked improvement), one was removed by relatives to be put in a private sanatorium, one was removed against advice by relatives, three were sent to private sanatoriums and twelve were committed to state hospitals. If a psychotic individual using bromides to excess does not show a marked remission in his mental symptoms within three to four weeks he is probably suffering from a more deep-seated psychosis than that merely produced by drugs. Treatment of bromide psychosis or intoxication consists of stopping the drug, forcing fluids and giving sodium chloride. Sedatives in all forms should be stopped and the excited patients should receive hydrotherapy in the form of continuous baths or wet packs. Cathartics and enemas should also be given to aid elimination. Bromide psychoses must be differentiated from dementia paralytica, alcoholic psychoses, encephalitis, multiple sclerosis and schizophrenia. When the bromide psychosis has cleared up a more deep-seated psychosis, such as manic-depressive psychosis, cerebral arteriosclerosis, involutional melancholia or schizophrenia, may be found. The majority of the patients in the present series used bromides following alcoholism. In some of the patients the bromide psychosis was superimposed on other mental diseases, including schizophrenia, manic-depressive psychosis and psychosis with cerebral arteriosclerosis. Bromides are eliminated slowly, they accumulate rapidly even in doses of from 45 to 60 grains (3 to 4 Gm.) daily and a delirium may occur within a few weeks even from ordinary therapeutic doses. Appropriate legislation should be secured to curb the indiscriminate sale of bromides to the public.

**Journal of Pharmacology & Exper. Therap., Baltimore**

63: 215-352 (July) 1938. Partial Index

- Irritability of Cardiac Vagus Nerves as Influenced by Intravenous Injections of Barbiturates, Thiobarbiturates and Picrotoxin. C. M. Gruber, C. M. Gruber Jr. and N. A. Colosi, Philadelphia.—p. 215.  
Point of Action of Barbiturates in Depressing Cardiac Vagus Nerves. C. M. Gruber, V. G. Haury and C. M. Gruber Jr., Philadelphia.—p. 239.  
Relation of Blood Pressure to Plasma Potassium Level. G. Brewer and P. S. Larson, Washington, D. C.—p. 272.  
Effect of Apomorphine on Movements of Small Intestine in Unanesthetized Dogs. D. Slaughter and E. G. Gross, Iowa City.—p. 289.  
Effects of Bismuth Sodium Tartrate on Blood and Hematopoietic Organs. J. W. Brown, S. P. Lucia and E. S. Mills, San Francisco.—p. 292.  
Effect of Parenteral Injection of Purines, Methylated Purines and Various Drugs on Creatine-Creatinine Metabolism. H. H. Beard and P. Pizzolato, New Orleans.—p. 306.  
Reported Anemia-Producing Qualities of 1-Methyl-5- $\Delta^4$ -Cyclohexenyl-5-Methyl-Barbituric Acid (Evipan, Evipal). H. K. Beecher, Boston.—p. 335.  
Further Evidences on Nature of Vasomotor Actions of Ethylhomosuprenin. W. M. Cameron, L. J. Whittell, J. M. Crismon and M. L. Tainter, San Francisco.—p. 340.

Journal of Urology, Baltimore

40: 269-358 (Aug.) 1938

- Renal Lipomatosis or Fatty Replacement of Destroyed Renal Cortex. J. B. Priestley, Des Moines, Iowa.—p. 269.  
Automatic Bladder Lavage with Control of the Factors of Time, Quantity and Pressure. W. F. McKenna, Brooklyn.—p. 276.  
Human Autonomic Pharmacology: XIII. Effect of Mecholyl and Prostigmin on Size and Tonus of Bladder. B. Greenberg, J. Loman and A. Myerson, Boston.—p. 280.  
Cystography, Especially Pneumocystography, as a Guide in Treatment of Vesical Neck Lesions. T. H. Sweetser, Minneapolis.—p. 285.  
Heterotopic Bone Formation Produced by Epithelial Transplants from Urogenital Tract of Dogs, Rabbits, Guinea Pigs and Cats with Notes on Apparent Inhibitory Effect of Parathyroidectomy on Bone Formation. A. C. Abbott, A. M. Goodwin and E. Stephenson, Winnipeg, Man.—p. 294.  
\*Antipyretic Action of Intravenous Administration of Mercurochrome in Acute Pyelonephritis. J. L. Emmett, Rochester, Minn.—p. 312.  
Mechanism of the Action of Pyridium. F. L. Adair, Hazel Dunlap and Gertrude Willmert, Chicago.—p. 319.  
Effect of Short Wave Therapy on the Guinea Pig Testis. S. F. Wilhelm and A. M. Schwartz, New York.—p. 335.  
Roentgen Visualization of Spermatocoele. S. E. Last, Brooklyn.—p. 339.

**Antipyretic Action of Mercurochrome.**—Emmett analyzes the forty intravenous injections of from 5 to 10 cc. of a 1 per cent solution of mercurochrome to thirty-four patients with acute pyelonephritis. The results substantiate the impression that acute pyelonephritis is the one condition in which the intravenous administration of mercurochrome may be expected to be effective. Its therapeutic value seems not to be that of eradicating the infection but rather of terminating the fever and ending the acute phase of the disease. Other chemotherapeutic agents must then be employed to sterilize the urine. This antipyretic action of mercurochrome may occasionally become an almost life saving procedure, as in a case in which septic fever threatens the life of a patient whose general condition is extremely poor. Mercurochrome often is of value especially when prostatic obstruction has caused severe disease of the kidneys.

Kentucky Medical Journal, Bowling Green

36: 253-300 (July) 1938

- Cancer. R. A. Bate, Louisville.—p. 255.  
Newer Fundamentals in Treatment of Diabetes Mellitus. D. S. Traub, Louisville.—p. 267.  
The Management of the Arthritic. R. H. Davis, Louisville.—p. 273.  
Congenital Bilateral Anophthalmos. C. T. Wolfe, Louisville.—p. 279.  
Secondary Vascular Shock. H. Lawson, Louisville.—p. 281.  
Clinical Recognition and Treatment of Chronic Sphenoiditis. N. Canfield, New Haven, Conn.—p. 284.  
Vitamins. J. R. Gott Jr., Louisville.—p. 289.  
Anorexia in Childhood. J. K. Mack, Louisville.—p. 292.

Medical Bull. of Veterans' Adm., Washington, D. C.

15: 1-98 (July) 1938

- Arthroplasty of Hip, with Use of Vitallium Cup. H. H. Hopkins and F. N. Zuck.—p. 1.  
Schanz Osteotomy for Ununited Fractures of Neck of Femur. P. E. Johnson.—p. 3.  
Unimportance of Alkalinization During Metrazol Treatment. E. Meslinger.—p. 6.  
Local and Splanchnic Anesthesia as Auxiliary to Incomplete or Waning Spinal Anesthesia. S. R. Maxeiner, F. R. Sedgley and L. C. Culligan.—p. 8.  
Correlation of Surgical, Pathologic and Roentgenologic Findings in Fifty Consecutive Cases of "Chronic" Appendicitis. A. Lederer.—p. 10.  
Sulfanilamide in Urology. J. H. Rock.—p. 13.  
Treatment of Gonorrhea and Other Urinary Tract Infections by Sulfanilamide. R. Sorenson.—p. 16.  
Sulfanilamide in Septic Surgery. H. D. Spickerman.—p. 21.  
Mandelic Acid in Renal Infections. G. W. Twomey.—p. 24.  
Surgical Treatment of Tuberculous Cavities. E. A. Beaudet and L. H. Fales.—p. 28.  
\*Pulmonary Moniliasis. W. A. Dearman.—p. 41.  
Roentgenographic Diagnosis of Intrathoracic Malignancy: Case Reports. C. W. McClanahan.—p. 45.  
Abscess of the Liver: Report of Six Cases. B. T. Wright.—p. 50.  
Therapeutic Management of Neurosyphilis. F. S. Caprio.—p. 54.  
Occupational Therapy for Psychotic Patients in Midlife. F. E. Leslie.—p. 60.  
\*Sulfanilamide in Oral Infections. W. D. Lanier.—p. 65.

**Pulmonary Moniliasis.**—Dearman points out that there have been observed on the Mississippi coast, in the past few years, at least six cases of primary pulmonary moniliasis. Their identification presented considerable diagnostic difficulty. The acute cases of the disease resembled acute bronchopneu-

monia in onset, physical signs and clinical course, while the chronic types simulated advanced pulmonary tuberculosis. A diagnosis of Monilia infections can be made only by repeated examinations of the sputum showing an absence of tubercle bacilli. The diagnosis of pulmonary moniliasis should be considered in any case of pulmonary disease in which the etiology is questionable.

**Sulfanilamide in Oral Infections.**—Lanier has used sulfanilamide as a routine in all oral infections except Vincent's stomatitis. In the outpatient clinic over a period of about six months, more than 100 cases in which teeth were extracted for far advanced pyorrhea were treated by inserting a tablet of from one-half to 5 grains (0.03 to 0.3 Gm.) of sulfanilamide into each socket. The same treatment was followed in extraction in more than 250 cases of chronic periapical infection. Smears taken from these sockets at the time of extraction showed many cocci present, while smears taken from twenty-four to forty-eight hours following treatment with sulfanilamide showed only a few organisms, and after three days no bacteria were present. In these cases there was a marked decrease in the usual after-extraction soreness, no pain and no dry sockets.

Michigan State Medical Society Journal, Lansing

37: 673-764 (Aug.) 1938

- Congenital Anomalies, with Particular Reference to Cryptorchidism, Hypospadias and Congenital Absence of the Vagina. V. S. Counseller, Rochester, Minn.—p. 659.  
Diagnosis of Meningitis in the Newborn and Infant Periods. M. Cooperstock, Marquette.—p. 698.  
Traumatic Rupture of the Spleen. W. H. Meade, Manistee.—p. 702.  
Abuse of the Cautery. B. W. Malfroid, Flint.—p. 704.  
Colloidal Aluminum Hydroxide Therapy in Upper Gastrointestinal Lesions. R. C. Connelly, Detroit.—p. 706.  
\*Method of Controlling the Immediate Systemic Pollen Reaction. B. A. Credille, Flint.—p. 711.  
Syphilis and Gonorrhea in Michigan. W. J. V. Deacon, Lansing.—p. 715.

**Systemic Pollen Reaction.**—Because of the possible danger associated in the sudden introduction of pollen extracts subcutaneously, Credille devised an apparatus which consists of a rubber tourniquet 24 inches in length and 1½ inches in width for slow injection. At intervals of one-half inch, perforations have been made for the purpose of adjusting the device to any size arm. About 2 inches from one end of the tourniquet is anchored a metal, at the distal end of which is attached a metal spring clamp for the purpose of holding a tuberculin syringe. The apparatus is adjusted to the upper part of the arm, and the tourniquet is tightened for a minute. The needle is then introduced subcutaneously at the outer aspects of the arm, 1½ inches below the tourniquet. The piston is withdrawn slowly once or twice and if there is no evidence of blood the tourniquet is released enough to permit venous flow, but it is retained on the arm sufficiently tight to support the apparatus for holding the syringe. The syringe is then clamped and held in position while a drop of the antigen is injected at intervals of one minute for five minutes. If there is no sign of reaction, the remainder of the material is injected. At the end of six minutes if there are no signs of general reaction the syringe and apparatus are removed. During the time of injections all patients are instructed to report any subjective symptoms that may develop, such as itching of the palms, generalized pruritus or tingling of the tongue. All patients should remain in the office for at least fifteen minutes following injection.

Military Surgeon, Washington, D. C.

83: 113-192 (Aug.) 1938

- \*Gonorrhea: Treatment with Hydrochloric Acid. C. E. Verdier.—p. 113.  
To Whom Honor Is Due. H. Pleasants Jr.—p. 119.  
Value of Routine Blood Sedimentation Tests in Dental Patients. C. V. Rault.—p. 132.  
Toxicity of Oxygen at Decreased Barometric Pressures. H. G. Armstrong.—p. 148.  
A Medicomilitary Exhibit. J. L. Kantor.—p. 152.  
The Amebiasis Problem. E. S. Kagy.—p. 158.  
Econometrical Case Holder for Chest Radiography. E. K. Reid and L. F. Black.—p. 168.

**Gonorrhea and Hydrochloric Acid.**—About three years ago Verdier began to use hydrochloric acid intravenously and intramuscularly in the treatment of gonorrhea in adults and children. Of the many thousands of injections (several thou-

sand cases) given there has not been a failure of cure or an unfavorable reaction. That the acid promotes an immediate response from the leukocytes can be easily demonstrated, thousands of comparative counts have been performed and uniformity was demonstrated. In acute uncomplicated gonorrhea, the initial intravenous injection is 10 cc. of a 1:500 dilution of hydrochloric acid in distilled water. This is repeated daily for about ten consecutive days, when the clinical symptoms are generally such that the interval between injections may be lengthened to two or three days for the period necessary to establish a proved cure. In subacute or complicated cases of gonorrhea the injections are given at intervals of two days until improvement begins, and then the periods are lengthened. The most impressive feature in connection with this form of therapy is the quick response of the subjective symptoms in the patient combined with a feeling of general bodily stimulation. Urinary distress and associated symptoms disappear with remarkable rapidity, and it is no unusual experience to see copious discharges lessen within forty-eight hours. For those unskilled in intravenous methods, an intramuscular injection of hydrochloric acid may be used; the strength generally used with good results was 2 cc. of a 2 per cent solution of hydrochloric acid in sterile water, with a 1 per cent addition of butyn. This is an almost painless procedure when the injection is given in the upper outer quadrant of the buttock with a keen needle of sufficient length to reach the belly of the muscle.

### Minnesota Medicine, St. Paul

21: 529-600 (Aug.) 1938

- Carcinoma of Colon and Rectum. I. Abell, Louisville, Ky.—p. 529.  
Problems Associated with Clinical Recognition of Pulmonary Hypertension. T. J. Dry, Rochester.—p. 535.  
Uterine Cancer. R. S. Cron, Milwaukee.—p. 542.  
Sulfanilamide in Urology. E. N. Cook and H. A. Buchtel, Rochester.—p. 546.  
Present Status of Gastroscopy. N. Giere, Minneapolis.—p. 550.  
Tumors of the Larynx. F. A. Figi, Rochester.—p. 553.  
Future Aims of the Hospital Library. G. R. Kamman, St. Paul.—p. 559.  
Melanosis Coli. L. A. Buie, Rochester.—p. 561.  
Hints on Use of Medical Indexes. T. E. Keys, Rochester.—p. 564.

### New England Journal of Medicine, Boston

219: 109-146 (July 28) 1938

- A Few of the Rules. R. Fitz, Boston.—p. 109.  
Intravenous Paralytic Narcosis for Pneumo-Encephalography. L. J. Robinson, Palmer, Mass.—p. 114.  
Observations on Relation of Poison Ivy and Poison Oak. J. B. Biederman, Cincinnati.—p. 117.  
Ambulatory Method of Treating a Fractured Patella. H. F. Day, Boston.—p. 119.

### New York State Journal of Medicine, New York

38: 1059-1102 (Aug. 1) 1938

- Relation of the Public Health Officer and the Physician in a Child Care Program. J. D. Craig, New York.—p. 1059.  
Cryptorchism: Indication for Operative Treatment. F. Schuck, New York.—p. 1064.  
Appetite and Weight-Building Tonic in Chronic Pulmonary Tuberculosis: Study of Ninety-Eight Cases. H. W. Leetch and J. N. Hayes, Saranac Lake.—p. 1069.  
Evipal Soluble Rectally in Obstetrics: Preliminary Report. S. L. Siegler and I. Beris, Brooklyn.—p. 1071.  
Primary Hepatoma of the Liver with Tumor Thrombosis of the Inferior Vena Cava and Heart. E. G. Gillmore, Johnstown, and H. E. Ehrlich, Gloversville.—p. 1075.  
Meningococcal Septicemia Treated by Fever Therapy. M. B. Rosenbluth and D. Stetten Jr., New York.—p. 1078.

### Northwest Medicine, Seattle

37: 197-230 (July) 1938

- Treatment of Acute Gonorrheal Urethritis: Its Present Day Status with Emphasis on Sulfanilamide Therapy. C. P. Mathé, San Francisco.—p. 202.  
Intravenous Pentothal Sodium Anesthesia. A. E. Lewis, Seattle.—p. 206.  
\*Acute Obstruction of Bowel. D. E. McGillivray, Port Angeles, Wash.—p. 210.  
Stones in the Common Bile Duct. R. E. Ahlquist, Spokane, Wash.—p. 213.  
Experiences with Protamine Zinc Insulin. C. H. Hofrichter, Seattle.—p. 218.

**Acute Obstruction of Bowel.**—McGillivray reports a case of high obstruction of the ileum (old adhesions following operation), one proved to be a Meckel's diverticulum, one of simple constriction of the ileum at the middle portion (high attach-

ment to stomach region) and one due to the folding of the ileum near the lower portion, due to old adhesions from drainage of an appendical abscess. The first patient died but could probably have been saved by early operation had it been permitted. Suction, as advocated by Wangenstein and others, seems to be a distinct advance in the early treatment of intestinal obstruction. It gives great relief and gives a little time to prepare the patient and decide on the type of operation necessary. It has been proved of inestimable value in postoperative treatment, including ileus and minor obstruction.

### Ohio State Medical Journal, Columbus

34: 741-840 (July) 1938

- Typhoid Fever Without a Fatality: Report of Ten Cases. J. W. Burrows, Lakeside.—p. 757.  
Injuries of Upper Cervical Spine and Their X-Ray Findings. H. F. Plaut, Cincinnati.—p. 760.  
The Eyegrounds in Mental Disturbances. W. J. Holmes, Warren.—p. 765.  
"Strokes" Without Paralysis: Problems of Diagnosis. H. Evans and G. T. Harding, Columbus.—p. 768.  
Nasal Allergy Associated with Other Allergic Manifestations. W. H. Craddock, Cincinnati.—p. 774.  
Cutaneous Anthrax in Man. J. S. Kiess, Bucyrus.—p. 776.  
Analgesia and Anesthesia in Obstetrics. J. A. Fraser, East Liverpool.—p. 778.  
Botulism: Report of Two Cases. H. M. Clodfelter, Columbus.—p. 782.  
Clinical Results in Prevention and Treatment of Hay Fever by Oral Administration of Pollens of the Grass and Ragweed Types. G. E. Rockwell, Cincinnati.—p. 784.  
Poliomyelitis: Symptomatology and Treatment: Part I. F. E. Stevenson, Cincinnati.—p. 788.  
Anterior Poliomyelitis: Orthopedic Management. J. A. Freiberg, Cincinnati.—p. 794.  
Classification of Tumors: Part III. Compiled by L. A. Pomeroy, with the assistance of the members of the Tumor Clinic, Cleveland.—p. 797.

### Southern Medical Journal, Birmingham, Ala.

31: 827-958 (Aug.) 1938. Partial Index

- Radiation Therapy of Primary Hemangioma of the Vertebrae. I. H. Lockwood and C. E. Bell, Kansas City, Mo.—p. 827.  
Resections of the Colon and Rectum and Means of Facilitating Them. A. G. Brenizer, Charlotte, N. C.—p. 834.  
Uterine Bleeding, a Gynecologic Problem. G. F. Douglas, Birmingham, Ala.—p. 848.  
Diseases Misdiagnosed as Early Syphilis. E. I. Thompson, Little Rock, Ark.—p. 859.  
Progress in Syphilis Control in the Southern States. W. K. Sharp Jr., New Orleans.—p. 866.  
Syphilis in the South: Statistical and Clinical Study of Syphilis in a Private Surgical Practice. F. W. Pickell, Brewton, Ala.—p. 874.  
Anemia and Pregnancy: Three Year Study on Negro Women. Amey Chappell and L. Blivings, Atlanta, Ga.—p. 876.  
Lateral Sinus Thrombosis Complicating Mastoiditis. J. C. McDougall and E. S. Wright, Atlanta, Ga.—p. 890.  
\*Gastrointestinal Expressions of Avitaminosis. J. H. Musser and W. A. Sodeman, New Orleans.—p. 897.  
Antipellagic Effect of Certain Pyridine Compounds. T. D. Spies, Helen M. Grant, Cincinnati, and N. E. Huff, Birmingham, Ala.—p. 901.  
Gastrointestinal Disorders Simulating Heart Disease. J. A. Lyon, Washington, D. C.—p. 902.  
Treatment of Drug Addicts at Lexington Hospital. L. Kolb and W. F. Ossenfort, Lexington, Ky.—p. 914.  
Recent Additions to Our Knowledge of Immunity in Malaria. S. F. Kitchen, Tallahassee, Fla.—p. 941.

**Gastrointestinal Expressions of Avitaminosis.**—Musser and Sodeman maintain that subclinical expressions of scurvy, beriberi and rickets are common and that expressions of borderline vitamin deficiency are encountered in all fields of internal medicine and particularly in the realm of gastro-enterology. There is between the deficiency necessary for the development of the full blown picture of disease and the intake optimal for the body a broad range in which the symptomatic expression is not typical or is nonspecific. Protean and diverse are the symptoms of the alimentary tract arising as a result of inadequate or minimal intake of the vitamins. The dietary flaws of the alimentary tract are discussed under three headings: the specific deficiencies, chronic dietary deficiency and conditioned deficiencies. The clinician in the management of patients suffering from rather vague and indeterminate symptoms, notably those which may be labeled dyspepsia or dyspepsia symptoms, should bear in mind that they may result from a diet which on superficial examination seems to be adequate but which actually is substandard.

**Surgery, Gynecology and Obstetrics, Chicago**

67: 153-264 (Aug.) 1938

- Asphyxia Neonatorum: The Pivot on Which Turns the Movement to Prevent Asphyxial Death. P. J. Flagg, New York.—p. 153.
- \*Osteolytic Osteogenic Sarcoma: Report of Eight Five-Year Survivals. I. S. McReynolds, Houston, Texas.—p. 163.
- Appendicitis in Childhood. E. H. Caldwell, Tyler, Texas.—p. 169.
- Persistence of Gonococcal Infection in Adnexa. W. E. Studdiford, W. A. Casper and E. N. Scadron, New York.—p. 176.
- Experimental Methods of Lung Collapse: Fascial Transplantation and Bronchial Ligation. L. Escudero and W. E. Adams, Chicago.—p. 181.
- The Physiology of Uterine Musculature. A. C. Ivy and L. Rudolph, Chicago.—p. 188.
- Surgical Anatomy of Superior Hypogastric Plexus: "Presacral Nerve." J. S. Labate, New York.—p. 199.
- Complete Removal of Stomach for Malignancy: Report of Five Surgically Successful Cases. F. H. Lahey, Boston.—p. 213.
- Nephrostomy: Some Clinical and Experimental Observations. H. C. Rolnick, Chicago.—p. 224.
- Tibia and Fibula Lengthening by the Turnbuckle Method. F. A. Aleorn, Lincoln, Neb.—p. 230.
- March Fracture. H. W. Meyerding and G. A. Pollock, Rochester, Minn.—p. 234.
- New Type of Suction Apparatus. C. H. H. Branch Jr., Los Angeles.—p. 242.
- Technic for Rapid and Absolute Sterilization of Instruments. C. W. Walter, Boston.—p. 244.
- Fractures of Lower End of Radius. G. W. Taylor and C. L. Parsons, Boston.—p. 249.

**Osteolytic Osteogenic Sarcoma.**—McReynolds states that in the entire group of 131 cases of osteolytic sarcoma recorded in the surgical pathologic laboratory of the Johns Hopkins Hospital there was a total of 117 cases in which the age was recorded. Fifty-six patients were from 11 to 20 years of age, 16 per cent were from 21 to 30, 8.5 per cent were in each of the next three decades, only one patient was less than 10 years of age, and seven were more than 60 years of age. The bones most often involved were in their order of frequency lower part of the femur, upper part of the tibia, pelvis, humerus, middle portion of the femur and lower part of the tibia. Among these patients were eleven who lived longer than five years after treatment was instituted. Three of these cases formerly believed to be osteolytic sarcoma were excluded because two had a marked resemblance to sarcoma of the nerve sheath and the other presented the histologic structure of synovial sarcoma. These patients were alive eleven, ten and twenty-eight years after radical resection or amputation which showed a destructive lesion in the involved bone. Of the eight remaining patients, five lived approximately ten years or longer and three died with metastasis at six, seven and seven and one-fourth years, respectively, after operation. The average duration of life was 10.3 months in the ninety-nine patients followed for five years after the primary treatment. Osteolytic sarcoma occasionally arises in a benign giant cell tumor, and this may account for the reports that some giant cell tumors metastasize fatally. Primary amputation well above the location of the tumor or radical resection if the diagnosis is confirmed is still the treatment of choice. The fact that minute deposits of tumorous tissue are often present in the marrow spaces at some distance from the gross lesion accounts for the frequent recurrence in the amputation stump.

**Tennessee State Medical Assn. Journal, Nashville**

31: 293-336 (Aug.) 1938

- Diagnosis and Treatment of Osteomyelitis. H. G. Hill, Memphis.—p. 293.
- Abscess of the Larynx: Report of Case. S. Lawwill, Chattanooga.—p. 299.
- Process of Refraction. H. C. Smith, Nashville.—p. 302.
- Internal Derangements of the Knee Joint. J. Penn and H. Penn, Knoxville.—p. 306.
- Late Effects of Toxemia of Pregnancy. M. S. Lewis, Nashville.—p. 313.

**Wisconsin Medical Journal, Madison**

37: 613-728 (Aug.) 1938

- The Surgeon's Role in Treatment of Infection. O. H. Wangenstein, Minneapolis.—p. 629.
- Etiologic Factors in Hemorrhagic States. F. W. Madison and T. L. Squier, Milwaukee.—p. 636.
- Lateral or Branchial Cysts of the Neck: Study of Thirteen Cases. A. S. Jackson, Madison.—p. 641.
- Our Common Problems. P. Bell, Madison.—p. 646.
- Psychiatric Prophylaxis. A. L. Beier, Chippewa Falls.—p. 649.
- Stone in Lower Portion of Ureter: Review of 192 Cases. V. J. O'Connor and H. D. Dykhuizen, Chicago.—p. 653.

**FOREIGN**

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

**British Journal of Anaesthesia, Manchester**

15: 133-176 (July) 1938

- Concerning Spinal Analgesia. I. W. Etherington-Wilson.—p. 135.
- Id.: II. A Criticism. E. F. Hill.—p. 142.
- Id.: III. Two Pertinent Cases and Some Criticism. H. Brennan.—p. 147.
- The Introduction of Avertin. G. Edwards.—p. 154.
- The Breaking of Spinal Needles. J. N. Cave.—p. 158.

**British Journal of Ophthalmology, London**

22: 385-448 (July) 1938

- Lymphoid Tumor of Lacrimal Gland. H. A. Cookson and A. MacRae.—p. 385.
- Photochromatic Interval in Glaucoma and Cavernous Atrophy. R. Pickard.—p. 391.
- Experimental Data on the Problem of the Permeability of the Cornea: I. Experiments on Exeised Pigs' Eyes and Living Rabbits' Eyes with Iodide and Nitrite. M. Klein.—p. 401.
- Id.: II. Permeability of the Exeised Cornea with Respect to Water and Chloride Ions. M. Klein and J. Sárkány.—p. 409.
- New Developments in the Pharmacologic Treatment of Primary Glaucoma. M. J. Schoenberg.—p. 417.
- Binocular Fixation for Scotometry at One Meter. J. Foster.—p. 426.

**British Journal of Physical Medicine, London**

1: 193-226 (June) 1938

- The Rheumatic Problem in Great Britain. M. Campbell.—p. 194.
- New Technic in Short Wave Therapy. J. P. P. Stock.—p. 196.
- Some Common Postural Deformities and Their Treatment by Exercises and Manipulation. E. Cyriax.—p. 202.

**British Journal of Rheumatism, London**

1: 1-72 (July) 1938

- The Empire Rheumatism Council. W. Willecox.—p. 7.
- Climate and Rheumatic Troubles. L. Hill.—p. 11.
- The Prerheumatic Child. L. Findlay.—p. 14.
- The Diagnosis and Treatment of Acute Rheumatism in Children. E. C. Warner.—p. 19.
- \*Gout in Women. F. G. Thomson.—p. 25.
- Differential Diagnosis of Advanced Gout. C. Golding.—p. 31.
- Gold Treatment of Rheumatoid Arthritis. A. H. Douthwaite.—p. 33.
- Indications for Employment of Inductothermy in Rheumatic Diseases. C. B. Heald.—p. 40.
- Estrin Treatment of Chronic Rheumatism. A. P. Cawadias.—p. 48.
- Doctor Bartholomew Joseph Alexander Dominici, 18th Century Charlatan Physician. P. Johnston-Saint.—p. 56.

**Gout in Women.**—Statistics show that 90 per cent of gout occurs in men, but Thomson points out that, as it is more likely to be overlooked in the more chronic and atypical forms (diagnosed as atypical rheumatoid or osteo-arthritis) in which it so often occurs in women, its incidence in women is probably higher. Though acute gout in its classic form does occasionally occur in women, it appears to be decidedly uncommon. In the great majority of cases gout occurs in women in its more chronic form. Chronic gout in women frequently presents a superficial resemblance to rheumatoid arthritis, particularly if the patient presents herself with one or more swollen and painful interphalangeal joints and is of the thin, debilitated type commonly associated with the latter disease. Instead of the diffuse fusiform periarticular swelling of rheumatoid arthritis, the outline of the joint is usually more irregular and the characteristic muscular wasting and deformity of rheumatoid arthritis are absent. If, on the other hand, the patient presents evidence of osteo-arthritis in the form of Heberden's nodes or a creaking knee with osteophytic deposits, the gouty lesions are likely to be attributed entirely to degenerative changes. Mixed forms of arthritis are not uncommon. Gout may occur in an osteo-arthritic joint as in any other, and conversely osteophytes frequently occur as a late result of gout. Another type of case in which the question of gout often arises is that of the woman presenting the signs and symptoms diagnosed as climacteric arthritis. The easier way of life, diminution of physical activity and tendency to indulge in more and richer food—which determine the onset of gout in middle aged men—apply equally or even more to women, in whom the climacteric implies a profound change in the physiologic "pattern." It is in the overnourished, florid type of women, the habit of body traditionally associated with gout, that climacteric

arthritis is especially prone to occur. Quite apart from the doubtful question as to whether climacteric arthritis is in itself an expression of gout, patients who suffer from villous arthritis of the knees commonly develop mild transitory attacks of swelling and tenderness in other joints. Here again one may be dealing with a condition of "mixed" arthritis, and the term "rheumatoid gout" does convey an adequate and reasonable description of the clinical aspects of such a case.

### British Journal of Tuberculosis, London

32: 133-204 (July) 1938

- Method for Treatment of Pulmonary Tuberculosis by Intrapulmonary Injections of Gelatin Acriflavine Calcium Chloride. R. A. Hunter and E. J. Peill.—p. 136.  
Incidence of Tuberculosis in Young Adult Women, with Special Reference to Employment. J. Heimbeck.—p. 154.  
Pulmonary Tuberculosis in Women Workers. H. H. Bashford.—p. 167.  
Incidence of Tuberculosis in Young Adult Women. C. J. C. Faill.—p. 170.  
Extrapleural Pneumothorax: Views and Experiences. R. C. Brock.—p. 173.  
Id.: T. H. Sellers.—p. 182.

### British Medical Journal, London

2: 163-208 (July 23) 1938

- The Profession and the Public. C. D. Lindsay.—p. 163.  
Treatment of Carcinoma in Pharynx and Larynx and Its Results. L. Colledge.—p. 167.  
Diagnosis of Undescended Testicle. D. Browne.—p. 168.  
Measles: Conduct of a School Epidemic. F. G. Hobson.—p. 171.  
Subvesical Diathermy Prostatectomy. R. O. Ward.—p. 175.  
Rupture of Uterus During Pregnancy. J. Riddell and J. Scholefield.—p. 177.

2: 209-272 (July 30) 1938

- The Mental Factors in Medicine. T. A. Ross.—p. 209.  
Value of Radiology in the Elucidation of Hemoptysis. F. G. Wood.—p. 211.  
Play Therapy for "Problem" Children. Ethel Dukes.—p. 213.  
Treatment of Gonorrhea with Uleron. D. F. Walsh.—p. 215.  
\*Postmortem Record of Pulmonary Tuberculosis in Diabetics. S. R. Gloyne.—p. 218.  
Electrical Ignition of Anesthetics. H. W. Swann.—p. 234.

**Pulmonary Tuberculosis in Diabetes.**—Gloyne reviewed the postmortem records of the London Chest Hospital, which is primarily concerned with the treatment of intrathoracic disease, and found twenty-one deaths (0.75 per cent) from diabetes in 2,826 necropsies (1,138 with active tuberculosis and 1,688 with nontuberculous diseases) between 1888 and 1937. Of the twenty-one patients with diabetes, four were not associated with tuberculosis and a fifth had only calcareous tubercles with puckering of the lung apices. The remaining sixteen had active pulmonary tuberculosis and comprised 1.4 per cent of the 1,138 necropsies with active tuberculosis. The majority of the patients were of the middle-age group. The type of tuberculous lesion found was that of excavation with extensive caseation, often pneumonic or bronchopneumonic in distribution. The common sequela of tuberculous laryngitis and enteritis was not encountered. No tuberculous foci were found elsewhere in the body (including the pancreas), except one example of miliary tubercles in the kidney, evidently a terminal lesion. Only one instance occurred in which there was any sign of quiescence. No significant differences were noted in the necropsies of the preinsulin and insulin periods. Obviously the diabetic patient is exposed to the same risks of infection as the rest of the population. No figures appear to exist for England to confirm or refute the clinical impression that the diabetic patient is prone to tuberculous infection, but the extensive American figures on the whole support the view.

### Irish Journal of Medical Science, Dublin

150: 245-292 (June) 1938

- Chemical Agents Transmitting Nervous Excitation. H. Dale.—p. 245.  
Future Treatment of Puerperal Sepsis in Dublin. A. H. Davidson.—p. 257.  
Gastric Analysis. M. H. O'Connor.—p. 270.  
Tomography in the Radiology of the Chest. F. G. Stewart.—p. 277.  
\*Cutaneous and Conjunctival Diphtheria. H. R. Rogers.—p. 283.

**Cutaneous and Conjunctival Diphtheria.**—Rogers presents eleven cases of cutaneous or conjunctival diphtheria which occurred within the last four months of 1937. The liability of these rarer forms of diphtheria to be multiple and to be associated with other conditions (e. g., streptococcal infections) is

shown. The importance of bearing in mind the possibility of diphtheritic infection in cases of conjunctivitis and impetigo which do not readily clear up with local treatment is suggested. Nine of the eleven patients recovered. The cause of death in each of the fatal cases was an associated streptococcal condition. In cutaneous or conjunctival diphtheria toxemia is not a marked feature; and the lesions, however long standing, quickly heal after the administration of antitoxin. These rare forms of diphtheria were present on admission in seven patients in conjunction with concurrent scarlet fever, erysipelas or measles. In none of the cases here recorded was the predominant or associated infection contracted after admission to hospital. The cutaneous or conjunctival diphtheritic condition was the sole infection in only two patients. In the five cases of cutaneous diphtheria the association of impetigo of the face or limbs with the diphtheritic or erysipelatos condition led to the swabbing of the cutaneous lesions. Of the six cases with conjunctival lesions, five were bilateral.

### J. Royal Inst. Public Health and Hygiene, London

1: 563-628 (July) 1938

- State Medicine and Industrial Hygiene. W. M. Frazer.—p. 587.  
Team Work in Tuberculosis. M. Davidson.—p. 603.  
Nutrition and Physical Training. S. Woodwark.—p. 611.  
Rheumatism and National Health. W. S. C. Copeman.—p. 623.

### Lancet, London

2: 179-234 (July 23) 1938

- The Profession and the Public. C. D. Lindsay.—p. 179.  
Bile Duct Reconstruction Over a Buried Rubber Tube. T. B. Mouat.—p. 181.  
Action of Hydrolysate of Striped Muscle on Malignant Tumors. A. H. Roffo.—p. 184.  
\*Dysentery Due to Bacterium Dysenteriae (Schmitz): First Known Outbreaks in Great Britain. Ann Ceinwen Evans.—p. 187.  
Individual Variations in Response to High Temperatures and to Production of Experimental Salt Deficiency. R. A. McCance.—p. 190.  
Simple Method of Bronchography in Children. N. M. Jacoby and G. Keats.—p. 191.  
Effect of Synthetic Estrogenic Substances on Body Growth and Endocrine Organs of the Rat. R. L. Noble.—p. 192.  
\*Vomiting in Diabetic Children. W. W. Payne.—p. 195.

**Dysentery Due to Bacterium Dysenteriae.**—Evans discusses two epidemics and sporadic cases of dysentery at the North Wales Counties Mental Hospital, Denbigh. The Schmitz bacillus is believed to have been the causative organism. In 1935 there were thirty-five cases and in 1938 there were 129 cases. In the 1935 epidemic an organism having the morphologic and biochemical characteristics of Bacterium dysenteriae Schmitz was isolated from twenty-one of twenty-nine cases examined. In the 1938 epidemic the Schmitz bacillus was identified by its serologic as well as its morphologic and biochemical characteristics and was found in thirty-nine of sixty-two cases examined. In the interval between the two epidemics a bacillus conforming morphologically and biochemically to the Schmitz bacillus was isolated from twelve sporadic cases of dysentery among women. Of these, nine occurred within a month and constituted a minor epidemic. In identifying the Denbigh strain of the Schmitz bacillus, Boyd's 214 serum was used. The serum is obtained by inoculating a rabbit intravenously with a killed suspension of this strain. The investigation into these epidemics supports the position of Bacterium dysenteriae Schmitz as a pathogen.

**Vomiting in Diabetic Children.**—According to Payne, in a typical attack of vomiting in diabetic children abdominal pain with nausea or loss of appetite are the first symptoms, and later on there is vomiting and perhaps headache. The child may be either flushed or pallid; the temperature is usually normal but may be slightly raised. After a few hours the condition may clear up and the appetite return, but often the vomiting persists and the progress now depends on the treatment. If nothing is done, and especially if no insulin is given, signs of ketosis develop, such as rapid respiration and drowsiness, and diabetic coma supervenes. Diarrhea may sometimes be an important symptom, but such cases do not progress to coma. The condition closely resembles recurrent or cyclic vomiting (often misnamed "acidosis" attacks) which occur in nondiabetic children. Usually in cases of vomiting not due to acute infections there is either a history of nervous excitement or a history of preceding hypo-



glycemia or at least of greater freedom from glycosuria. A possible explanation of this sequence of events is as follows: The initial hypoglycemia stimulates the secretion of epinephrine, which presumably has the effect of liberating dextrose from the liver and thus raising the blood sugar. It is therefore not improbable that in some more susceptible patients the action of the epinephrine on the alimentary tract will be apparent. Any other effective stimulus to the oversecretion of epinephrine can give rise to similar effects, thus accounting for attacks produced by excitement, shock or fever. When the oversecretion of epinephrine ceases, these disturbances disappear and the patient recovers from the attack without further complications. If, however, the child's store of glycogen is low, a carbohydrate starvation develops, since no food is being absorbed from the intestine and all the available glycogen has been used up by the epinephrine. Fat unbalanced by carbohydrate must now be used, and this causes a production of ketone bodies and a lessened effectiveness of such insulin as is available (Himsworth, 1934), leading to formation of ketone in still greater amounts. The increased ketonemia will cause further vomiting. The condition now resembles that of untreated diabetes. In the early stages the treatment is simple. In the hypoglycemic variety administration of sugar at the very commencement of the attack will abort it by raising the blood sugar and stopping further secretion of epinephrine. If the condition has advanced beyond this stage it is sometimes sufficient to stimulate the stomach to function normally by gentian and sodium bicarbonate. If this is unsuccessful and nausea persists or vomiting occurs, it is necessary to give sugar together with insulin. An injection of from 20 to 30 units of insulin is usually needed and the sugar should exceed 1 ounce (30 Gm.). The sugar and insulin may be repeated at intervals of four hours if necessary. It is vitally important that sugar should be absorbed. The treatment of the later stages is that of diabetic coma.

### Medical Journal of Australia, Sydney

2: 35-70 (July 9) 1938

- Ureteral Calculus. K. Kirkland.—p. 35.  
Radiologic Aspect of Treatment of Ureteric Calculus. D. G. Maitland.—p. 38.  
Management of Facial Injuries. C. H. Osborn.—p. 41.  
Appearance of the Eyelids in Certain Diseases. T. M. Mansfield.—p. 49.

### South African Medical Journal, Cape Town

12: 453-484 (July 9) 1938

- Medical Establishments and Institutions at the Cape: VI. Dr. J. Atherstone and the Introduction of Anesthetics. P. W. Laidler.—p. 453.  
A New Radium Treatment. J. van Rooyen.—p. 457.  
Notes on a Milk-Borne Typhoid Outbreak. D. Landau.—p. 463.  
The District Surgeon and Public Health. J. H. Rauch.—p. 465.  
Treatment of Fracture of Femoral Neck by Lippmann's Corkscrew Bolt. C. G. L. van Dyk.—p. 475.  
The Prevention of Toxicity in Treatment of Syphilis. L. F. Freed.—p. 477.

### Chinese Medical Journal, Peiping

54: 1-100 (July) 1938

- Soybean "Milk" as Food for Young Infants. R. A. Guy and K. S. Yeh.—p. 1.  
Patellar Graft in Arthrodesis of the Tuberculous Knee. C. M. Meng.—p. 31.  
Two Poisonous Plants, Huang-T'eng and Tsai-Chung-Yao, and Their Identification. P. F. Mei and T. Q. Chou.—p. 37.  
\*Studies on Hunan Local Food Products: I. Chemical Composition and Vitamin C Content of Hunan Citrus Fruits. T. F. Su and D. Y. Liu.—p. 40.  
\*Id.: II. The Antiscorbutic Activity of the Hunan Kwang Chü. T. F. Su and T. P. Tu.—p. 44.

**Hunan Citrus Fruits.**—Su and his co-workers analyzed five species of Hunan citrus fruits for their ascorbic acid content. The determination of the vitamin C content of the juice revealed that the Hunan Kwang Chü orange and two species of pomelo are rich in ascorbic acid. For its high vitamin C content, low price and convenience for household use and infantile feeding the Hunan Kwang Chü orange is to be highly recommended. The antiscorbutic activity of the juice of the Hunan Kwang Chü orange was comparable to that of the Sunkist orange and that of the real Kwang Chü orange.

### Annales de Médecine, Paris

44: 85-164 (July) 1938

- Normal and Pathologic Tyraminemia. M. Loeper, A. Lesure and A. Netter.—p. 85.  
Researches on Sclerosis of Pulmonary Artery: Cardiopulmonary Syndrome and Sclerosis of Pulmonary Artery. A. Oszaeki and E. Szczeklik.—p. 105.  
Role of Thyroid in Regulation of Chlorides in Blood. J. Decourt.—p. 133.  
\*Role of Liver in Modification of Proteins in Patients with Suppurations: Hemoclastic Shock. I. Blitstein.—p. 145.

**Effect of Liver on Proteins in Suppurations.**—Blitstein points out that the liver plays an important part in the metabolism of proteins. The existence of a proteopexic function of the liver has been demonstrated by Widal and his collaborators. These authors observed in dogs with Eck's fistula, after a meal rich in protein, a shock which manifested itself in a reduction in the blood pressure, leukopenia, inversion of the leukocytic formula, diminution of the refractometric index and a reduction in the coagulability of the blood. The same phenomena were produced following the injection into a vein of the general circulation of blood withdrawn from the portal vein after a meal rich in proteins or following the injection of peptone into the peripheral circulation. When products of the decomposition of protein are resorbed in the intestine they are diverted to the liver. When the liver is impaired this function is weakened and the foreign proteins pass through into the general circulation and provoke the same changes in the blood as do the experiments cited. Widal and his collaborators suggested a test for the detection of the proteopexic insufficiency, namely the digestive hemoclasia reaction (hemoclastic crisis). According to these authors this test is frequently positive in hepatic insufficiency. However, it has been found that the test is not strictly specific for proteins, because positive reactions can be produced also with fats or carbohydrates. Moreover, the reaction is often positive in infectious diseases and negative in patients with hepatic disorders when they have disturbances which are accompanied by leukopenia; in these cases even a leukocytosis may develop. Widal pointed out that after the injection of peptones there results an immunity of twelve hours' duration and others demonstrated that the same immunity can be observed in the course of infections which are accompanied by a destruction of albumins. This immunity can be detected by Umber's test. Umber demonstrated that rectal lavage with milk produces a hemoclastic shock even in normal subjects, because the milk is resorbed by the blood without passing through the liver. Thus Umber's test must produce positive reactions in all persons except those who have been immunized. Immunity against hemoclastic shock is observed under the following conditions: (1) for a period of from three to four weeks after an injection of serum, (2) in infections that are accompanied by high fever and (3) in all forms of leukopenia. Blitstein studied hemoclastic shock sixteen times according to Widal's technic (in fourteen patients, twelve of whom had suppurating infections and two had hepatic disorders) and three times according to Umber's technic. In seven patients with suppurations the digestive hemoclasia was positive, in three doubtful and in two negative. In the latter two, Umber's test revealed that they were immunized. Three negative results were observed in two patients who previously had had a positive hemoclasia. In one case the negative result was explained by a leukopenia.

### Presse Médicale, Paris

46: 1177-1192 (July 30) 1938

- Adaptation of Tubercle Bacillus to Mediums Poor in Nitrogenous and Carbohydrate Substances: Practical Consequences of This Adaptation in Man and Bovine Animals. A. Vaudremer.—p. 1177.  
\*Syndrome of Hyperfolliculinism. J. Varangot.—p. 1180.

**Hyperfolliculinism.**—Varangot applies the term syndrome of hyperfolliculinism to disturbances that are caused by the presence of excessive quantities of estrogen. Discussing the experimentally induced syndrome of hyperfolliculinism, he first reviews animal experiments made by various investigators and then shows that the syndrome can be induced in castrated non-hysterectomized women by the injection of large doses of the estrus-producing substance. Moreover, the syndrome has been

known to develop in impuberal girls in whom an existing gonococcal vulvovaginitis was treated with injections of estrogen. After discussing the clinical manifestations and the humoral aspects of the syndrome that is induced by an excess of estrogen, the author gives his attention to its causes. In the conclusion he says that a hyperplasia of the endometrium constitutes the most definite sign of the existence of a hyperfolliculinism; that is, the biopsy of the endometrium reveals the presence of excessive quantities of estrogen. The determining causes of the syndrome are not all known as yet. Besides lesions of the folliculosecretory parenchyma of the ovaries, there must exist functional disorders of the ovary without visible lesions and disturbances in the metabolism of the estrogenic bodies, which lead to the status of hyperfolliculinism. The inadequacy of the methods of quantitative investigation of the ovarian function does not yet permit an explanation of the mechanism and pathogenesis of the disorder.

### Revue de Chirurgie, Paris

57: 389-468 (June) 1938

- \*Study of Some Modifications of Metabolism Provoked by Surgical Operations. A. Delrez.—p. 389.  
Operability and Extended Operations in Cancer of Rectum in Women. J. Ducuing and M. Grinond.—p. 423.  
Treatment of Abscess of Cerebellum. L. Léorat.—p. 444.  
Three Fractures of Vertebral Column Treated by Infiltrations of Procaine Hydrochloride. A. Jung and N. Christéas.—p. 458.

**Modifications of Metabolism by Operations.**—In order to throw light on the modification of the metabolic processes by surgical intervention, Delrez studied subjects who were comparatively young and healthy and who had a noninfectious, benign surgical disorder that could be treated under local anesthesia. On the basis of his investigations he reaches the following conclusions: 1. The influence exerted by an operation on the basal metabolism is neither considerable nor uniform. 2. Surgical treatment brings about an increase in the nitrogenous metabolism, which becomes manifest in hyperazotemia and hyperazoturia. Abundant hydration of the subject operated on usually diminished the hyperazotemia, although its effect on the hyperazoturia is practically nil. 3. An operation is followed by a hypochloremia, which the ingestion of chlorides is incapable to combat efficiently because the ingested chloride is rapidly eliminated in the urine. There is no apparent relation between hyperazotemia and hypochloremia; the treatment referred to as "rechloridation" seems to act on the humoral status of the person who has been operated on only in the proportion in which it utilizes the water of the organism. 4. The renal function, estimated by the method of Rehberg, behaves in the following manner: The function of glomerular filtration is practically unchanged, whereas the tubular function of reabsorption varies; (a) chloride is reabsorbed with great intensity; (b) water is reabsorbed in variable proportions, probably according to the state of hydration of the tissues; (c) the reabsorption of urea varies in the same manner as that of water; this greatly influences the excretion of the nitrogenous waste products and the degree of azotemia. It appears that hydration has an important part in the prevention and the therapy of postoperative azotemia.

### Schweizerische medizinische Wochenschrift, Basel

68: 925-944 (Aug. 6) 1938. Partial Index

- Sylvan Plague. K. F. Meyer.—p. 925.  
\*Abacterial Meningitides. G. Fanconi.—p. 929.  
Anterior Lobe of Hypophysis and Fat Metabolism. J. H. Burn.—p. 932.  
Diagnosis of Gonorrhea and Atypical Gonococci. P. Asch.—p. 934.  
Treatment with Short Waves or Diathermy in Peritoneal Inflammatory Diseases. T. Koller.—p. 937.

**Abacterial Meningitides.**—Fanconi says that the benign, so-called aseptic or, better, abacteriologic meningitides are important in the differential diagnosis of the preparalytic meningitis of acute anterior poliomyelitis. He shows that knowledge of the course of the completely developed poliomyelitis is the most important factor in the correct diagnosis and he describes a typical case. He points out that formerly a differentiation was made merely between the preparalytic and the paralytic phase but that two phases can be distinguished within the preparalytic one, namely a purely meningitic one

and the preparalytic one, in the restricted meaning. The meningitic phase is characterized by headaches, backaches, rigidity of the neck, Kernig's sign, increase in the reflexes and so on. The preparalytic phase, in the restricted sense of the term, begins when symptoms of adynamia, weakening of muscular power and of the reflexes are added to the meningitic symptoms. During the meningitic phase the inflammation is restricted to the meninges; during the preparalytic stage an inflammatory edematous swelling develops in the gray matter of the anterior horn, and during the paralytic stage the irreparable neuronophagy of the ganglion cells of the anterior horns begins. In many cases the poliomyelitis fortunately does not reach the paralytic stage. Those cases which are arrested in the meningitic or in the preparalytic stage the author regards as abortive. In reviewing case histories of former years he finds that such cases in which paralytic symptoms did not develop were often diagnosed as aseptic meningitis, but he thinks that many were abortive cases of poliomyelitis. He believes that, although typical poliomyelitis usually develops during the summer months, abortive cases may occur the year round. However, although he thinks that many cases that have been diagnosed as aseptic meningitis were really atypical cases of poliomyelitis, he does not deny the existence of a benign lymphocytic meningitis as a disease *sui generis*. He describes a case in which the diagnosis of benign acute lymphocytic meningitis was justified because there were no preparalytic symptoms, there was no dromedary curve and the suddenly appearing meningitic symptoms were too severe for a poliomyelitis. However, he does not consider it justified to regard the dromedary curve as characteristic for poliomyelitis and as an aid in the differential diagnosis, because there is at least one form of bacterial virus meningitis, namely the disease of swineherds, in which the dromedary curve is likewise observed. To be sure, the dromedary type of the fever curve in the disease of swineherds differs somewhat from that in poliomyelitis in that in the first disease the stage of general infection is the severest and longest and the meningitic stage is short and the fever not so high.

### Annali dell'Istituto "Carlo Forlanini," Rome

2: 241-316 (April) 1938. Partial Index

- \*Identification of Tubercle Bacilli in Gastric Secretion and Feces of Tuberculous Children. U. Monaco and T. Ruggiero.—p. 255.  
Behavior of Tuberculin Shock in Tuberculous Animals in Avitaminosis Diet. A. Gualdi and F. Serafini.—p. 264.  
Action of Basal Pneumothorax on Apical Lesions. M. Benvenuti.—p. 273.  
Researches on Value of Constitutional Morphologic and Hereditary Factors in Pathogenesis and Evolution of Osteo-Articular Pulmonary Tuberculosis. F. D'Angelo.—p. 281.

**Tubercle Bacilli in Gastric Secretion and Feces in Tuberculosis.**—Monaco and Ruggiero investigated the gastric secretion and the feces of seventy children, ranging in age from 2 to 12 years, who presented various forms of pulmonary tuberculosis. Petragliani and Ogawa's technics were used in making the cultural studies. The biologic tests were carried out on guinea pigs. Tubercle bacilli were identified in the gastric secretion in twenty-three cases by the biologic and cultural method and in four by microscopic examination of the enriched secretion. They were identified in the feces by the cultural and biologic method in nine cases. The authors point out the importance of the application of the method for an early diagnosis of pulmonary tuberculosis, for the prevention of the disease and also in following the evolution of the disease.

### Anales de la Facultad de Medicina de Montevideo

23: 453-690 (Nos. 6, 7 and 8). Partial Index

- \*Primary Acute Asystolia in Nursing. J. Bonaba and Maria Luisa Saldún de Rodríguez.—p. 453.  
Suppurated Adenitis of Mesenterium: Anatomoclinical, Etiopathogenic and Therapeutic Study. P. Larghero Ybarz.—p. 531.  
Blastomycotic Granuloma. D. Mosto.—p. 585.  
Treatment of Acute and Chronic Adrenal Insufficiency by Adrenal Cortex Extract. J. Morató Manaro.—p. 654.

**Asystolia in Nurslings.**—Bonaba and Saldún de Rodríguez report seven cases of primary acute insufficiency and dilatation of the heart in children. Five were nurslings and two were

young children. The authors say that the syndrome develops suddenly in either eutrophic or dystrophic infants and children apparently in normal health. There is no fever. The symptoms are prostration, depression, vomiting, spasmodic cough, dyspnea, cyanosis, increase of the cardiac volume from acute dilatation of the heart, hepatomegaly, edema, anasarca and ascites. The condition must be differentiated from bronchopneumonia, idiopathic hypertrophy of the heart and primary pericarditis. The etiology is unknown. The treatment consists in early bleeding and prolonged administration of digitalis and of other cardiac tonics. Complete recovery may take place or there may be either a clinical recovery with persistence of the increased volume of the heart or with dilatation of the organ or a transient recovery with recurrences. When the disease follows a fatal evolution, peripheral edema, congestion and edema of the lung, ascites and anasarca develop early. The anatomic study shows dilatation of the heart and visceral congestion and edema of the cardiac type. Hypertrophy and malformations of the heart or lesions of the valves do not exist. The structure of the cardiac muscle is normal on microscopic study.

### Prensa Médica Argentina, Buenos Aires

25: 1445-1490 (Aug. 3) 1938. Partial Index

\*Origin of Para-Apical X-Ray Shadows in Cardiovascular Diseases. A. J. Heidenreich and M. Joselevich.—p. 1445.

Etiopathogenesis of Lupus Erythematosus. J. L. Carrera.—p. 1482.

Copper in Normal Spleen: Variations in Different Animals. D. Echave.—p. 1485.

**Para-Apical X-Ray Shadows.**—Heidenreich and Joselevich review the different theories on the origin and characteristic aspects of the apical triangular shadows which appear in roentgenograms which are taken in the frontal position in patients with cardiovascular diseases. It has been stated that shadows with neat contours show abnormal ligaments of bands of fibrous tissue from the parietal pericardium to the cupola of the left hemidiaphragm, whereas those with rough contours show local accumulation of fat. The authors saw the shadow with smooth contours in frontal roentgenograms of four patients in the course of cardiovascular diseases. They found at necropsy that the shadows were made by accumulation of fat around the apex of the heart. The fat accumulates in the pleural tissue which is in contact with the pericardium and it forms a piece of fat similar to a small tongue. The appearance of the shadow in the roentgenogram depends on the size of accumulation of fat in relation to the enlargement of the heart.

### Revista de la Soc. Argent. de Biología, Buenos Aires

15: 59-206 (May) 1938. Partial Index

New Histologic Technic for Determination of Glycogen in Muscles. P. Rojas and L. S. Resta.—p. 162.

\*Changes of Minerals in Blood in Course of Typhoid in Children. J. M. Valdés, B. A. Macola and A. S. Segura.—p. 184.

Changes of Calcemia After Hysterectomy Alone or in Association with Removal of Ovaries in Fibromatosis of Uterus. B. A. Macola and P. Martínez Esteve.—p. 195.

**Minerals in Blood of Children with Typhoid.**—Valdés and his collaborators made determinations of the minerals in the blood of sixty-one children with typhoid, ranging in age from 2 to 12 years. Clark and Collip's method was used for determining the calcium in the blood, Bell and Doisy's for that of inorganic phosphorus, and Bell-Doisy-Briggs' and Kramer-Tisdall's for those of magnesium and potassium and sodium, respectively. The amount of sodium, potassium and magnesium in the blood are normal at the height of the disease and increased in convalescence. The amount of calcium and phosphorus is diminished at the height of the disease and normal in convalescence. In the course of typhoid with cardiovascular complications the amount of sodium in the blood is higher than normal, that of potassium is lower than normal, calcium and phosphorus are still lower and magnesium does not change. The minerals in the blood do not change in the course of typhoid with intestinal perforation.

### Deutsche Zeitschrift für Chirurgie, Berlin

250: 359-542 (June 25) 1938. Partial Index

Deformities of Syphilitic Saddle Nose. H. Gillies.—p. 379.

\*Rapidity of Migration of Tetanus Toxin in Animal Organism. H. Bromeis.—p. 402.

Clinical and Chemical Contribution to Study of Gaucher's Disease. M. Zehnder.—p. 422.

\*Cholangiography During Operation. O. Hultén.—p. 484.

Injuries of Tibial Collateral Ligament of Knee and Their Treatment. W. Wagner.—p. 514.

Transplantation of Adrenal Tissues into Kidney. F. Klages.—p. 529.

Treatment of Fractures of Neck of Femur. S. Becker.—p. 535.

**Migration of Tetanus Toxin.**—Bromeis points out that in the treatment of tetanus the quantity and especially the duration of the administration of antitoxin are not uniform. He thinks that this is due to the fact that, although the incubation period is known, it is not known how rapidly the tetanus toxin migrates. The entire period of incubation can be divided into four stages: during the first one the toxin is formed at the point of entry; during the second stage the toxin migrates from this site to the regional nerve; during the third stage it travels along the nerve to the central nervous system and during the fourth stage it accumulates and then penetrates into the cells of the central nervous system. In order to determine the length of these different periods, the author made experiments on guinea pigs and rabbits. Summarizing his observations, he says that the toxin travels in the lymph channels of the tissue, from the site of formation to the regional nerve, at the rate of about 1 cm. an hour; the passage along the nerve to the spinal cord is somewhat more rapid. The latter requires in rabbits twelve hours, with a total incubation period of from forty-two to forty-eight hours; in guinea pigs about six hours, with an incubation period of from eighteen to twenty-four hours. The longest part of the incubation period, more than half of the time, is required for the accumulation around and entrance into the cells of the spinal cord. The migration from the depot of the toxin to the nerve requires only a small part of the period of incubation. The conclusion at which the author arrives on the basis of these observations is that in human subjects too the time during which the administration of tetanus antitoxin promises results is relatively short. For this reason all antitoxin should be administered on the first day or on the first two days.

**Cholangiography During Operation.**—Hultén defines cholangiography as the roentgenologic visualization of the biliary passages. To perform a cholangiography the contrast fluid can be introduced either through an external biliary fistula or through a surgically introduced choledochus drain. This procedure is designated by the author as secondary cholangiography. He shows that cholangiography can be performed also during the operation; that is, following the exposure of the bile passages, by means of direct injection of the contrast fluid into the bile passages. To this method he applies the term primary cholangiography. After pointing out that Mirizzi was the first one who performed and described this primary cholangiography, the author says that during the last year he himself performed primary cholangiography systematically in all operations on the biliary passages. He says that a water soluble contrast medium should be used which mixes with the bile. The roentgenogram must be sharp and clear, because otherwise defects in filling are readily overlooked. In order to obtain clear pictures, respiratory movement must be avoided during the roentgenologic exposure; the patient must hold his breath. To do this the patient must be awake, that is, the operation should be made under spinal or splanchnic anesthesia. The mattress of the operating table has an opening for the insertion of the film holder. The author describes the course of the operation and of the primary cholangiography and he reproduces some of the roentgenograms which he obtained by means of the primary cholangiography. He discusses the conditions that influence the passage of the contrast medium through the duodenal portion of the choledochus. The possibility of a differentiation by primary cholangiography of a pathologic spasm of the sphincter from an accidental contraction he regards as slight. He points out

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